Securing Mountain Water and Livelihoods

Annual Report
October 1, 2014 – September 30, 2015

APS-527-13-000002 – Climate Change Adaptation Program (GPAP)

Submitted by:

The Mountain Institute

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ACRONYMS

ACC	Adaptation to Climate Change
ALA	Local Water Authority (ANA)
ANA	National Water Authority
APCI	Peruvian Agency for International Cooperation
CAMBIAR	Climate Adaptation in Andean Basins
CCA	Climate Change Adaptation
CONCYTEC	National Council of Science and Technological Innovation
COP	Chief of Party
CSA	Compensation for Environmental Services
DGIIA	Direction General of Environmental Research and Information (MINAM)
DGIP	Direction General of Public Investment (MEF)
EIC	Component Implementation Teams
EWB	Engineers Without Borders
FCAM	Faculty of Environmental Sciences (UNASAM)
FINCyT	Fund for Innovation Science and Technology
GOR-Ancash	Regional Government of Ancash
GRRNGMA	Regional Office of Natural Resources and Environmental Management (GOR-Ancash)
HIMAP	High Mountain Adaptation Partnership (USAID)
IAP	Participatory Action Research
IDP	Institutional Development Plan
IMACC	Project to Implement Climate Change Adaptation Measures (MINAM-IDB)
IPROGA	Institute for the Promotion of Integrated Water Management
IR	Intermediate Result
ISF / EWB	Engineers Without Borders
IT	Technical Report

ACRONYMS

LAPA	Local Adaptation Plan of Action
LB	Baseline
LWA	Local Water Association
M & E	Monitoring and Evaluation
MEF	Ministry of Economy and Finance
MM	Municipal Commonwealth
MEIA	Monitoring Evaluation and Impact Assessment
MINAM	Ministry of the Environment
MRSE	Mechanism for Retribution of Ecosystem Services
OGEYPS	General Office of Outreach and Social Projection (UNASAM)
NGOs	Non-Governmental Organization
PAAL	Plan of Action for Local Adaptation
PAR	Participatory Action Research
PCM-SD	Presidency of the Council of Ministers-Secretary of Decentralization
PDI	Institutional Development Plan
PIP	Public Investment Project
PMP	Performance Monitoring Plan
PNH	Huascaran National Park
PUCP	Pontificia Universidad Católica de Perú
POA	Annual Operating Plan
POG	General Operating Plan
PUCP	Catholic University of Peru
REGEMA	Network of Commonwealth Managers
ERCC-Ancash	Regional Climate Change Strategy of Ancash
SENAMHI	National Meteorology and Hydrology Service of Peru
SERNANP	National Service of Protected Areas

ACRONYMS

SIAR-Ancash	Regional Environmental Information System of Ancash
SNIP	National System of Public Investment (MEF)
TMI	The Mountain Institute
SNIP	National Public Investment System
UGRH	Unit of Glaciology and Water Resources (ANA)
UNASAM	National University Santiago Antúnez de Mayolo
UNALM-LEUP	National Agrarian University La Molina. Ecology and Pasture Management Laboratory
UNMSM-TL	San Marcos National University-Remote Sensing Laboratory
UPCH-EL	Peruvian University Cayetano Heredia Eco-Toxicology Laboratory
USAID	United States Agency for International Development
USFS	US Forest Service
UTA	The University of Texas at Austin
UvA-IBED	University of Amsterdam - Institute of Biodiversity and Ecosystem

1. EXECUTIVE SUMMARY

Securing Mountain Water and Livelihoods is a three-year initiative (April 7, 2014 to April 6, 2017) led by The Mountain Institute (TMI). TMI cooperates with three main groups of institutional actors to implement the project:

1. National University Santiago Antúnez de Mayolo (UNASAM) and other national and international research groups to increase and improve the information available to support climate change adaptation in Ancash;

2. Municipal commonwealths, district and provincial local governments, and the Regional Government of Ancash to improve adaptation policies, services, and increase public investment in ecosystem services and irrigation; and

3. Rural communities and grassroots organizations to implement small scale climate change adaptation projects.

The goal of the Securing Mountain Water and Livelihoods project is to promote climate-resilient development in highland Ancash, Peru, through creating networks for information sharing and technical application, channels of public investment funding, and environmentally-sound strategies for adaptation that can ultimately be scaled out to other mountain ranges in Peru. The project has three expected results that contribute to the project goal:

R1. Develop a university network to provide technical assistance in climate change adaptation to local governments and communities.

R2: Develop a program in public investment to support local adaptation plans of action.

R3: Replicate methods of climate change adaptation at the community level and disseminate training systems at the university and local government levels.

The outcomes for the annual period of October 1, 2014 – September 30, 2015 are detailed below:

R1. In cooperation with the University of Texas at Austin (UTA), TMI established an internship program within UNASAM for three academic faculties: environment, economy and agronomy. The internships are offered to senior-year students or recent graduates. Interns are trained in climate change adaptation concepts and work for a six-month period collecting information to support the elaboration of SNIP 'green' (grassland and wetland) and irrigation projects. Interns work at the scale of the sub-watershed to produce GIS water resource maps (detailing discharge rates, water quality); water balance profiles of sub-watersheds; land cover maps (location and extension of wetlands, forests, agro-pastoral areas); maps of existing irrigation infrastructures; socio-economic surveys of irrigation canal users; maps of glacial lakes and identification of cases in which there are risks of glacial lake outburst floods; public databases for climate and hydrology information, and a literature library of studies conducted in Huascaran Biosphere Reserve that support climate change adaptation. Identified in conjunction with local and regional governments, all of the above listed products fill information gaps that limit the development of 'green,' irrigation, or reforestation SNIP projects. TMI's assessment of the student internship program concludes that it is a promising mechanism for producing site-specific social or environmental information to support climate change adaptation. Internships prove valuable in generating data to be characterized and analyzed for practical application, specifically in improving the quality of SNIP project profiles. To improve the formative process and organizational aspects of the internship program TMI has developed a virtual platform, which is currently in use for the second group of interns.

In order to promote applied research, TMI convened a group of researchers from Lima universities who work on high-mountain ecosystem topics relevant to the Sustaining Water and Livelihoods project goal and outcomes for adaptation. The group includes the Rangeland Laboratory of the Agrarian University, La Molina (UNALM-LEUP), the ecotoxicology Laboratory of the Peruvian University, Cayetano Heredia (UPCH-EL), and the Remote Sensing Laboratory at the National University of San Marcos (UNMSM-TL), as well as, other groups that participate to a lesser extent. Researchers identified three areas of interest in which they could promote projects in cooperation with UNASAM: (i) management of wetland and grassland ecosystems; (ii) water quality assessments and management in natural systems; and (iii) climate change and hydrological modeling. UPCH-EL and UNASAM obtained funding from the National Fund for Innovation Science and Technology (FINCyT) to develop bio-remediation technologies that can reduce mineral contamination in waters affected by glacier recession and other sources of natural contamination. UPCH-EL also collaborated actively in the development of a smartphone application to quickly collect information and map water quality using micro-invertebrates as indicators. The application was tested and used in UNALM field courses to collect information in one sub-watershed. The system will be presented to the public with UNASAM in December 2015. This technology and arrangement with the university has also proved to be an additional strategy for UNASAM students to collect information at local sites. Having validated the pilot concept, TMI will transfer the initiative to UNASAM and promote the development of other smartphone apps to generate information in support of climate change adaptation.

TMI promoted the establishment of a 'climate platform' through which member organizations in Ancash generate water and climate information. The purpose of establishing this group was to foster informational exchange and promote mechanisms for improving access to information. The group was instrumental in incentivizing the Regional Government to establish the Regional Environmental Information System of Ancash (SIAR-Ancash). TMI supported the process by facilitating the support of the Ministry of Environment in Lima for the formal establishment of the SIAR.

The environmental information generated by the project will be housed in the SIAR-Ancash as described under R2.

R2. TMI coordinated project activities to develop a program to design and fund public investment projects for local governments located in three municipal commonwealths (*Waraq*, *Tres Cuencas*, and *Rio Yanamayo*), the Regional Government of Ancash and other regional agencies. The mission of this program is to support local adaptation efforts for the goal of securing water resources and promoting local economic development in the participating territories. TMI provided technical assistance to support the process required to make the above commonwealths operational. Each have, to date, achieved varying levels of progress.

The *Waraq* Municipal Commonwealth is now fully operational. It receives funds for one manager and two support staff positions. It has obtained MEF codes to implement projects, has established a bank account, and has obtained approval (*viabilización*) for a SNIP project to establish an early warning system for Palcacocha Lake outburst flooding (GLOF) which threatens the city of Huaraz.

The *Tres Cuencas* Municipal Commonwealth*: Santa, Pativilca, Fortaleza* is composed of nine municipal governments. Despite its large number of members, *Tres Cuencas* has nearly completed all the administrative requirements to become fully operational. At the request of its local governments, this commonwealth is successfully promoting the establishment of the Water Resources Council [*Consejo de Recursos Hídricos*] of the *Pativilca* and *Fortaleza* watersheds. Both watersheds are shared by Lima and Ancash Regions and therefore required the cooperation of both governments. The Lima government has already installed the committee to initiate the

process to establish the *Pativilca* Water Resources Council, and the Regional Government of Ancash has scheduled a meeting in November for the *Fortaleza* Water Resources Council approval. Once the two water councils are established, the *Tres Cuencas* Municipal Commonwealth will be the institutional mechanism to implement ecosystem conservation and irrigation projects in the upper sections of these two watersheds.

The *Rio Yanamayo* Commonwealth has not been able to advance with the administrative requirements to initiate its operation due to lack of political support at the mayoral level. While the current manager of *Rio Yanamayo* Commonwealth has cooperated with TMI, the commonwealth is planning to replace this position. This action is expected to relieve tensions between the commonwealth members. One municipality of the *Rio Yanamayo* Commonwealth participates in the Diploma course and is preparing a SNIP project profile to conserve its wetlands.

TMI also responded to the request presented by the Regional Government of Ancash to develop its Regional Climate Change Strategy (ERCC). By the end of the fiscal year, the strategy was underway, and it is expected to be completed by the end of December 2015. Complementing this activity, TMI provided support in establishing the SIAR-Ancash and training its staff in the systems' operation. A next step will be to sign an MOU between TMI, the SIAR-Ancash, and MINAM to ensure regular transfer of information generated by the project. TMI will encourage other members of the 'climate platform' to sign similar agreements.

TMI coordinated with the Direction General of Public Investment at MEF (DGIP) to implement a Diploma level course to elaborate SNIP profiles of 'green' and irrigation projects. Thirty participants are undergoing training and currently preparing seven SNIP projects (four irrigation projects and three 'green' projects). One of the seven projects is being prepared by a team from the Huascarán National Park. The final evaluation of the course will take place in February 2016 and will be assessed according to the number of SNIP projects successfully elaborated and approved (*viabilizados*), as well as, the number of participants who graduated.

In addition to the seven SNIP projects under construction, TMI supported the *Waraq* Commonwealth in the approval process (*viabilización*) of the Early Warning System in the case of a Palcacocha Lake outburst flood (GLOF). The technical studies that contributed to this SNIP project were carried out as an initiative by UTA under the HIMAP-USAID project. TMI presented the results of the disaster risk studies to the newly elected authorities of Huaraz and Independencia, the Presidency of the Council of Ministers Emergency Response Group, and the DGIP at MEF. The project was approved for 1.2 million dollars. The Antamina mining company has indicated interest in financing this project through the '*Obras por Impuestos*' tax mechanism. In FY 2016 TMI will sign and agreement with CARE and the *Waraq* Commonwealth to complete the next steps required to move the current SNIP profile forward for implementation.

Gender activities focus on women who serve as councilors in municipal governments of the three commonwealths and are implemented as special activity of R2. During FY2015, trainings were attended by 15 women serving on municipal councils (including one female mayor) and 17 women serving as leaders of local organizations. Training themes included: the unique roles of women-leaders; climate change impacts; and methods for designing local, gender-focused actions to reduce vulnerability. In addition to this intensive training, 42 women councilors from Ancash received training on gender inclusion and introductory public administration, which reminded them of their equal voice in government and encouraged them to exert their responsibilities.

R3. During FY2015 TMI completed diagnostic studies to (i) identify project interventions necessary to implement payment for ecosystem services (PES) schemes and (ii) identify local

development objectives and vulnerability to climate change in communities located in the three municipal commonwealths. TMI produced several documents to provide strategic direction to the implementation of payment for mountain ecosystem services schemes: (i) a conceptual framework that also identified experiences in payment for ecosystem services in Peru; (ii) a document describing water management at local levels; (iii) an analysis of stakeholders; and (iv) a narrative and complementary map of social conflicts around water in Huascaran Biosphere Reserve (HBR) identifying potential sites to implement this activity. Based on these studies and taking into consideration the normative on Mechanism for Retribution of Ecosystem Services (MRSE) approved by the Government of Peru in 2015, TMI established an agreement with Huascaran National Park to implement MRSE initiatives for supporting community-based conservation projects. The implementation phase will start in FY15/16.

TMI completed three rapid rural diagnostic studies of the territories of the three municipal commonwealths. These diagnostic studies describe the commonwealth territory, agro-ecosystems, the environmental services provided by the territory that require conservation, and a preliminary view of local development objectives, climate vulnerability, and how the objectives of each commonwealth fit those development and vulnerability needs. Following these initial diagnostic studies, TMI established an alliance with the Science Office of UNESCO Peru to apply the experience gained from designing community-level, climate-proof projects to the rest of the Huascaran Biosphere Reserve. In partnership with UNESCO, using methods broadly described by the DGIP-MEF in their December 2014 SNIP guide, TMI conducted a survey of local perceptions of risk and climate change from 349 households, complemented with eight total, men's and women's focal groups. The results of the study will provide inputs for the design of SNIP project profiles and local interventions at the community level.

The three rapid rural diagnostics also identified community-based organizations interested in participating in initiatives that combat climate change vulnerability. TMI has completed the following:

- A detailed analysis of the agricultural systems of the rural community of Cahuide (located in *Waraq* Municipal Commonwealth).
- A preliminary design of a system of small water reservoirs and improved irrigation system in the rural community of Santa Cruz (located in *Waraq* Municipal Commonwealth).
- A project proposal to establish a bio-remediation system in the Shallap irrigation canal to improve water quality affected by natural water pollution by minerals (located in *Waraq* Municipal Commonwealth).
- A Community training program in the peasant community of Aquia to support their initiative to declare a private protected area to conserve native forests associated with the regulation of water (located in *Tres Cuencas* Municipal Commonwealth).
- Hut construction technologies in high-altitude puna areas to reduce vulnerability to extreme spells of cold. The diagnostic focused on documenting temperature and health conditions inside and outside puna huts (located in the *Tres Cuencas* Municipal Commonwealth).
- Strategic development and land use plan of the community of Canrey in the context of climate change (located in the *Tres Cuencas* Municipal Commonwealth).
- Identification of ecotourism alternatives to protect wetlands in the community of Los Andes (located in the *Tres Cuencas* Municipal Commonwealth).

- Plan of bio-remediation activities in the main irrigation canal of the community of *Canrey Chico* to improve water quality affected by natural water pollution by minerals (located in the *Tres Cuencas* Municipal Commonwealth).

Some of these studies are already creating opportunities to engage government agencies in the identification, design, and implementation of climate-proof local development initiatives. For example, as a result of project intervention, the territory of *Waraq* Municipal Commonwealth has been chosen by the Ministry of Agriculture as a pilot site to implement its Climate Change Adaptation Plan (PLANGRACC). Additionally, TMI has obtained an MOU with Agrorural (signature pending) to cooperate in the implementation of climate-proof projects in the *Rio Yanamayo* Municipal Commonwealth and other sites. We are also discussing similar opportunities to cooperate with the government programs FONCODES and JUNTOS.

2. MAP OF PROJECT SITE

The Securing Mountain Water and Livelihoods project is implemented in the highlands of Ancash Region. The project is implemented with provincial and district municipalities of three municipal commonwealths:

1. *Waraq*, made up of the province of Huaraz and the district of Independencia.
2. *Tres Cuencas: Santa, Pativilca, Fortaleza*, made up of the provinces of Recuay and Bolognesi and eight districts located in these two provinces
3. *Rio Yanamayo*, made up of the provinces of Carlos Fermín Fitzcarrald and Mariscal Luzuriaga and six districts located in these two provinces.

The project sites overlap with the Huascarán Biosphere Reserve (HBR), an area made up Huascarán National park in the core area, 10 municipal commonwealths, 14 provinces, 29 districts and 295 rural communities with a total population of approximately 549,338 people (Map 1). TMI is cooperating with UNESCO Science Office in communication activities to educate citizens and civil government officials in the larger territory of the HBR about climate change to create a knowledge base and changes in behavior that favor climate change adaptation.

ALTERNATIVAS INNOVADORAS Y ESTUDIOS

Estudios en el ámbito de las Mancomunidades

Diagnostico de las plantas de tratamiento - MM Rio Yanamayo

Inventario y caracterización del recurso hídrico - MM Rio Yanamayo

Estudio de calidad de agua y elaboración de un sistema de monitoreo - MM Rio Yanamayo

Inventario de la cobertura de vegetal y potencial - MM Rio Yanamayo

Recopilación de datos de bio indicadores a través de un App de celulares para calidad de agua - MM Waraq

Estudio de la cobertura de vegetal y potencial - MM Tres Cuencas

Inventario y caracterización de la infraestructura de riego y disponibilidad de recursos hídricos - MM Tres Cuencas

Estudio de calidad de agua y elaboración de un sistema de monitoreo - MM Tres Cuencas

Proyectos de inversión pública - Diplomado MEF

Mejoramiento del servicio de agua para riego en la localidad de Carcas, Chiquian, Bolognesi - MM Tres Cuencas

Mejoramiento y ampliación del sistema de riego Chalhuaruri - Chamanayoc, Huaraz - MM Waraq

Instalación del servicio de agua del sistema de riego en el centro poblado de Canrey Chico y Pariapata, Recuay - MM Tres Cuencas

Recuperación de los ecosistemas de montaña de bofedal y bosques relictos de la laguna de Huachucocha, San Luis - MM Rio Yanamayo

Creación del servicio de agua para riego en los sectores Pachac y Huachac del centro poblado de Roca, Ticllos, Bolognesi - MM Tres Cuencas

Recuperación del ecosistema de montaña pajonal en la zona de uso especial de la quebrada Querococha del parque Nacional de Huascarán, Ticapampa y Catac, Recuay - MM Tres Cuencas

Recuperación del servicio ecosistemico de retención hídrica en los bofedales de la laguna Conococha, Catac, Recuay - MM Tres Cuencas

Innovacion educativa para la Adaptación al Cambio Climático

Programa de innovación educativa e investigación tecnológica para el desarrollo sostenible con enfoque de adaptación al cambio climático, Institutos de Educacion Superior Tecnológico Público de Piscobamba y San Nicolás - MM Rio Yanamayo,

Estudios con Comunidades

Estudio de Mejoramiento del sector agropecuario al frente al Cambio Climático - CC Cahuide

Pequeños Proyectos

Implementacion de reservorios familiares y riego tecnificado - Comité de Usuarios de Santa Cruz - ISF

Desarollo del ecoturismo y turismo educativo a través la implementación del área de Conservación de zonas húmedas – CC. Los Andes, Sheclapata, Recuay

Creacion de Area de Conservacion en las partes altas del distrito de Aquia . CC Aquia
Creación de Área de conservación comunitaria de humedales, Wilcacocha - Santa Cruz

Apoyo en la Gestión de Proyectos de Inversión Publica

Implementacion de un sistema de bioremediacion del agua del canal Shallap Huapish Todla - Comité de usuarios del canal SHAHUATOC

Implementación de una mini central de energía hidroeléctrica, San Nicolás, Yanamayo - MM Rio Yanamayo

Investigación Acción Participativa

Mejoramiento del manejo de ganaderia - Asociaciones Rimay Condor y Yanatuna - Aquia

Chozas climaticas: Adaptacion de las viviendas en casa ecologicas - CC Los Andes, CC Cordillera Blanca, CC Catac, CUP Querococha

Implementacion de instrumentos de gestion: Plan de desarrollo comunal de la CC Cordillera Blanca

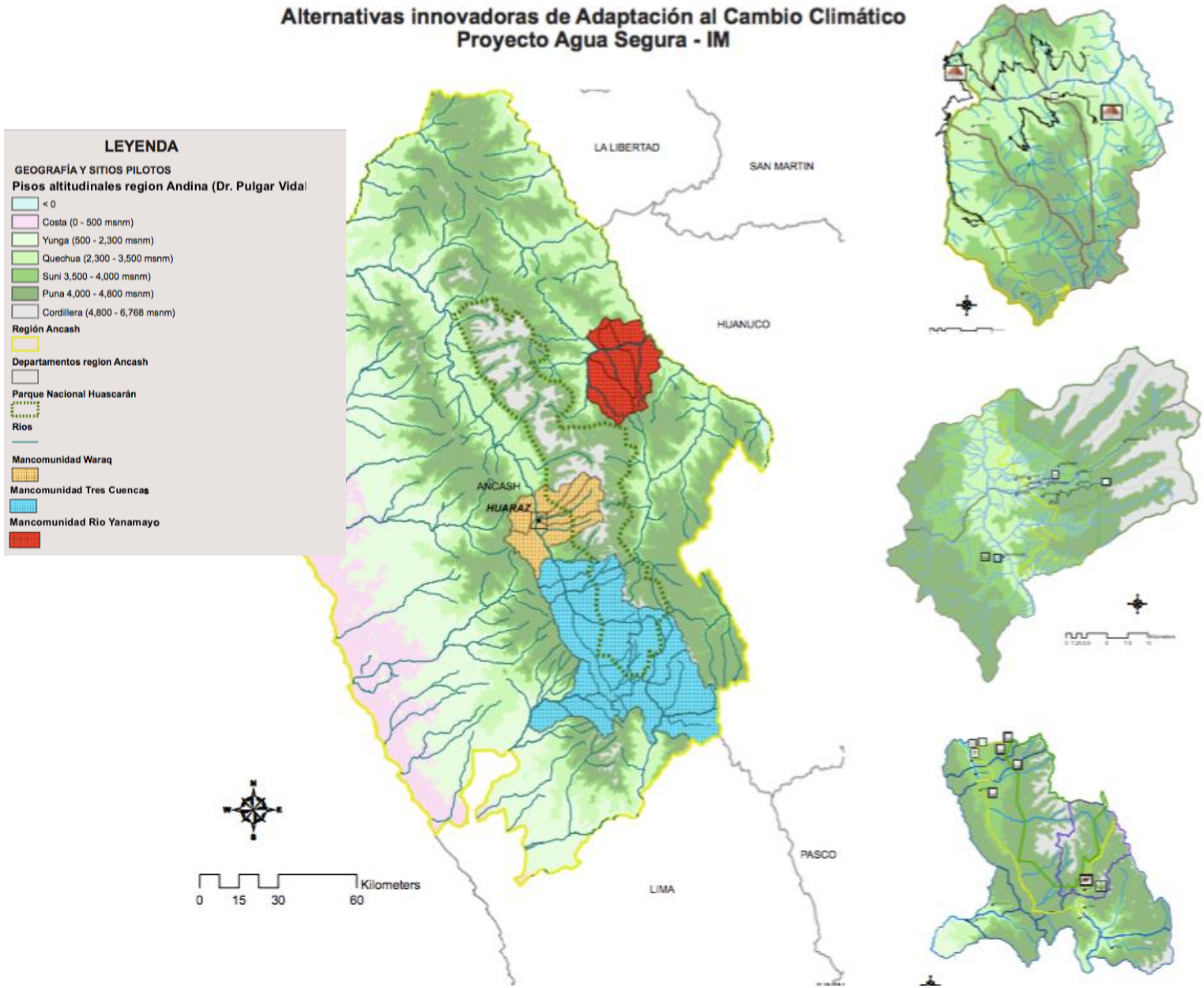
Mejoramiento del sistema de bioremediacion de la Canrey Chico - CC Cordillera Blanca

USAID | PERU

INSTITUTO DE MONTAÑA

Realización: Anais Zimmer

Alternativas innovadoras de Adaptación al Cambio Climático
Proyecto Agua Segura - IM



4. SUMMARY TABLE OF INDICATORS

4.1. Project Objectives

Securing Mountain Water and Livelihoods is a three-year initiative (April 7, 2014 to April 6, 2017) led by The Mountain Institute (TMI). The goal of the Securing Mountain Water and Livelihoods project is to promote climate-resilient development in highland Ancash, Peru, through creating networks for information sharing and technical application, channels of public investment funding, and environmentally-sound strategies for adaptation that can ultimately be scaled out to other mountain ranges in Peru. The project has three expected results that contribute to the project goal:

R1. Develop a university network to provide technical assistance in climate change adaptation to local governments and communities.

R2: Develop a program in public investment to support local adaptation plans of action

R3: Replicate methods of climate change adaptation at the community level and disseminate training systems at the university and local government levels

TMI provides technical assistance to support the development of climate-proofed public investment projects and local initiatives that support the conservation of the ecosystems that regulate water, such as, wetlands, grasslands and native forests, or that expand and improve irrigation systems. During this process, TMI has cooperated with the Department of Environmental and Water Resources Engineering of the University of Texas at Austin to develop and improve climate change adaptation tools related to water resources (e.g. tools to assess risk of glacial lake outburst floods, and risk assessments of small irrigation projects in the context of climate change).

4.2. USAID Indicators

INDICATOR USAID	DESCRIPTION	UNIT OF MEASUREMENT	Report Period: October 1, 2014 - September 30, 2015			Annual Target	Accumulated over Life of Project (LoP)	% To Date	Life of Project Target	Life of Project Actual	% of LoP Target
			Target	Actual	% of Target						
USAID 3 4.8.2-14. Number of institutions with improved capacity to address climate change issues as a result of USG assistance	Municipal commonwealths recognized	Institutions	16	14	**88%**	16	14	88%	32	14	**43.75%**
USAID 3 4.8.2-10. Amount of investment leveraged in U.S. dollars, from private and public sources, for climate change as a result of USG assistance.	Project Early Warning System and bioremediation have been approved	US $	$1,000,000	$1,250,300	**125%**	1	1.128	113%	8	1.128	**14.10%**
USAID 4.8.2-6 Number of people trained in climate change as a result of the US Government assistance	Women and others (leaders and counselors) have been trained in gender an	People	157	157	**100%**	180	157	87%	546	157	**28.75%**

INDICATOR USAID	DESCRIPTION	UNIT OF MEASUREMENT	Report Period: October 1, 2014 - September 30, 2015			Annual Target	Accumulated over Life of Project (LoP)	% To Date	Life of Project Target	Life of Project Actual	% of LoP Target
			Target	Actual	% of Target						
	climate change										
USAID GNRD-3. Proportion of women reported increased self-efficacy with training programs by the US government supported	Women and others (leaders and counselors) increased self - efficacy	Percentage women	10	Base line	Base line	10	0	Base line	30	0	Base line
USAID 4.8.2-28. Number of laws, policies, strategies, plans, agreements or regulations addressing climate change (mitigation and adaptation) and / or biodiversity conservation proposals officially adopted or implemented as a result of the US Government assistance	Municipal commonwealths have Operative Plans. Status of the managers' network.	Laws, policies and others	3	0	0%	3	0	0%	13	0	**0.00%**
USAID C12. Number of people informed and sensitized on natural resource management, biodiversity conservation and climate change as a result of USG assistance	Holding events, fairs, workshops, discussions and updating website (include Facebook) on activities in the fields of project	People	1150	1127	98%	1150	1127	98%	3450	1127	**33%**
USAID DO 3 C11. Number of studies and scientific research related to environmental issues which contribute to better management of natural resources as a result of USG assistance	Studies and research were developed to understand the context and improve environmental management focused in climate change adaptation	Studies	**21**	**20**	**95%**	21	20	95%	40	12	**30.00%**

5. PROJECT IMPLEMENTATION FY 2015 (valuation of progress)

Result 1. Develop a university network to provide technical assistance in climate change adaptation to local governments and communities

Code	DESCRIPTION	PRGRAMMED					
		Year 2015				Life of Project Target (%)	Life of Project Actual (%)
		Q4		Total Year 2015			
		P	E	P	E		
Result 1	**Develop a university network to provide technical assistance in climate change adaptation to local governments and communities (weighted average: IR 1.1 + IR 1.2 + IR 1.3).**	**3**	**5.9**	**25**	**37.9**	**100**	**50.6**
Intermediate Result 1.1 (weighted average: average of activities * 0.54)							**33.9**
Intermediate Result 1.1 (average of activities)							
IR 1.1	UNASAM has the capacity and the systems for: student training, conduct relevant, applied research on adaptation to climate change, and implement effective extension services to support local and regional governments of Ancash.	**5.2**	**9.45**	**25**	**40.75**	**100**	**62.75**
1.1.1	Establishment of the inter-university platform for climate change adaptation research, training and extension services	12.5	3.8	25	37	100	62
1.1.2	Development of CCA training, research and extension capabilities	8.3	14	25	55	100	68
1.1.3	Generation of education policies and systems for climate change adaptation: training, research and extension services	0	1	25	25	100	50
1.1.4	Design and implementation of climate change adaptation applied research and extension program with university students and faculty	0	19	25	46	100	71
Intermediate Result 1.2 (weighted average: average of activities * 0.28)							**8.1**
Intermediate Result 1.2 (average of activities)							
IR 1.2	The CIAD and other laboratories provide decision makers in local and regional governments, climate analysis and support systems to reduce vulnerability to climate change.	0	4.6	25	25	100	29
1.2.1	Support to the implementation of the business plan for UNASAM laboratory services to reduce vulnerability to climate change	0	9.2	25	40	100	48
1.2.2	Development of project research initiatives for the Mining Canon (tax) Fund for Scientific Research	0	0	25	10	100	10
Intermediate Result 1.3 (weighted average: average of activities * 0.18)							**8.55**
Intermediate Result 1.3 (average of activities)							

Code	DESCRIPTION	PRGRAMMED					
		Year 2015				Life of Project	Life of Project
IR 1.3	Access to meteorological data and early warning systems has been increased	8.75	4.85	37.5	42.5	100	47.5
1.3.1	Development of technical roundtable for generating climatological data	12.5	6.7	50	35	100	35
1.3.2	Design and operation of an efficient information system for climate change adaptation using cellphone network infrastructure and other technologies, with support from UNASAM faculty, students and laboratories	5	3	25	50	100	60

Result 2. Develop a program in public investment to support local adaptation plans of action

Code	DESCRIPTION	PRGRAMMED					
		Year 2015				Life of Project Target (%)	Life of Project Actual (%)
		Q4		Total Year 2015			
		P	E	P	E		
Result 2	**Develop a program in public investment to support local adaptation plans of action (weighted average: IR 2.1 + IR 2.2)**	**10.5**	**18.6**	**39.7**	**36.1**	**100**	**42**
Intermediate Result 2.1 (weighted average: average of activities * 0.5)							**25**
Intermediate Result 2.1 (average of activities)							
IR 2.1	Municipal commonwealth and regional government have completed or improved PAAL plans and have trained personnel to incorporate analysis of climate change vulnerability and risk analysis in the design of projects for the National Public Investment System (SNIP).	9.3	39	31.25	39	100	50
2.1.1	Design of institutional development plans (IDPs) and cooperative agreements for their implementation with municipal commonwealths	6.25	35	25	35	100	57
2.1.2	Implementation of IDPs and technical assistance in the design of climate change adaptation projects under LAPAs	12.5	43	37.5	43	100	43
Intermediate Result 2.2. (weighted average: average of activities *0.5)							**17**
Intermediate Result 2.2. (average of activities)							
IR 2.2	Regional and municipal governments have increased investment of public funds in local development projects that increase the resilience of natural systems and economies of mountain communities to climate-related threats.	6.25	34	150	34	100	34
2.2.1	Design and implementation of technical assistance program and financial management of public investment funds with a climate change adaptation approach	6.25	34	50	34	100	34

Code	DESCRIPTION	PRGRAMMED					
		Year 2015				Life of Project Target (%)	Life of Project Actual (%)
		Q4		Total Year 2015			
		P	E	P	E		
2.2.2	Generation and SNIP registration of public investment projects with a climate change approach	6.25	30	50	30	100	30
2.2.3	Development of technical and dialogue platform: Promoting adaptation approaches in public investment at the level of the regional government and municipal commonwealths	6.25	38	50	38	100	38

Result 3. Replicate methods of climate change adaptation at the community level and disseminate training systems at the university and local government levels

Code	DESCRIPTION	PRGRAMMED					
		Year 2015				Life of Project Target (%)	Life of Project Actual (%)
		Q4		Total Year 2015			
		P	E	P	E		
Result 3	**Replicate methods of climate change adaptation at the community level and disseminate training systems at the university and local government levels (weighted averages IR 3.1 + IR 3.2 + IR 3.3 + IR 3.4)**	**5**	**2.6**	**31**	**26**	**100**	**41.2**
Intermediate Result 3.1 (weighted average: average of activities * 0.25)							**10.6**
Intermediate Result 3.1 (average of activities)							
IR 3.1	Users of upland ecosystem services have established compensation mechanisms that support highland communities engaged in ecosystem conservation efforts.	6.25	12.5	31.25	30	100	42.50
3.1.1	Compilation of information on experience, stakeholders and existing and potential mechanism for compensation or PES.	6.25	20.00	25	40	100	65.00
3.1.2	Consultation and planning of development of compensation mechanisms or PES.	6.25	5.00	37.5	20	100	20.00
3.1.3	Generation of capacities and agreements with platforms for compensation mechanisms or PES.	0	0.00	0	0	100	0.00
Intermediate Result 3.2 (weighted average: average of activities * 0.1)							**6.4**
Intermediate Result 3.2 (average of activities)							
IR 3.2	Network of grassroots groups innovating technologies or institutional arrangements that reduce climate risks have increased their capacity to design, finance and implement livelihood projects with public funds,	3.125	6.82	6.8	36	100	63.50

Code	DESCRIPTION	PRGRAMMED					
		Year 2015				Life of Project Target (%)	Life of Project Actual (%)
		Q4		Total Year 2015			
		P	E	P	E		
	reducing their vulnerability to climate change.						
3.2.1.	Assessment of climate change innovations based on local knowledge and practices, with an emphasis on gender (information on past experiences)	0	2	50	50	1	100.00
3.2.2.	Assessment of pilot sites based on development objectives, climate change threats and affected resources. Three assessment levels: (1) commonwealths of highland Ancash, (2) selected sub-basins/ micro-basins, (3) community/ population/pilots	0	0	50	40	1	100.00
3.2.3.	Identification of climate change innovations based on local knowledge and practices, with an emphasis on gender, past (3.2.1) and current (3.2.2) information from pilot sites	0	10.3	33.3	35	1	35.00
3.2.4.	Design and management of innovative climate change adaptation projects, with an emphasis on women's groups (PROCOMPITE and others).	12.5	15	50	19	1	19.00
Intermediate Result 3.3 (weighted average: average of activities * 0.35)							**11.7**
Intermediate Result 3.3 (weighted average)							
IR 3.3	Grassroots groups are organized to conduct participatory action research in the municipal commonwealths.	6.25	9	85	67	100	33.50
3.3.1	Design of PAR operational framework and small-scale projects based on the knowledge and practices identified	0	5	35	40.00	100	40.00
3.3.2	Implementation of PAR and small-scale projects for natural resource management, with an emphasis on water management and livelihoods using a CCA approach	12.5	4	50	27.00	100	27.00
Intermediate Result 3.4 (weighted average: average of activities * 0.3)							**12.5**
Intermediate Result 3.4 (average of activities)							
IR 3.4	Systems to disseminate and replicate training tools, adaptation methods and successful experiences are operational and institutionalized.	6.25	5.8	33.33	31.67	100	41.67
3.4.1	Development of climate change adaptation communication materials (radio programs, audiovisual, posters, pamphlets, etc.)	6.25	5	25.00	50	100	60.00
3.4.2	Development of the virtual platform on training, research and dissemination of CCA experiences in Ancash (preparation of educational modules)	0	8.5	25	25	100	35.00
3.4.3	Dissemination of project results (web, social networks, the media, open house, short courses, publications, radio)	12.5	4	50	20	100	30.00

5.1. Main Achievements

R1. Develop a university network to provide technical assistance in climate change adaptation to local governments and communities.

During Fiscal Year 2015, UPCH-LE in cooperation with TMI and UNSAM obtained $122,300 dollars from the National Fund for Science and Technology (FINCyT) to develop a technology to mass-produce native plants with capacity to capture metals and reduce levels of pollution. This project will eventually support phyto-remediation actions like those identified by the community of Canrey Chico (Tres Cuencas municipal commonwealth) or the users of Shallap canal (Waraq Commonwealth (see Indicator USAID 2 4.8.2-10)

Formal training events (i.e. fulfilling the PMP standards) on climate change adaptation reached a total of 157 individuals, from UNASAM faculty and students, to government officials and community leaders (see Indicator USAID 4.8.2-6).

R 1.1. UNASAM has the capacity and systems to (a) conduct relevant applied research on climate change adaptation, (b) train students, and (c) utilize effective extension services in support of local and regional government systems in Ancash.

TMI conducted a preliminary diagnostic study of the services provided by the university in areas relevant to climate change adaptation, creating a baseline for assessing improvements and organizing the training of students. The diagnostic study reveals that research in climate change is absent from the university policies and current priorities.

The project communicated the necessity of cultivating a research support network comprised of researchers from national universities or other research groups that are already active in the region but do not necessarily coordinate with each other or UNASAM.

The network met twice during the year and identified three areas of research and cooperation that are relevant to climate change adaptation: (i) climate studies; (ii) wetlands and upland ecosystems; and (iii) water quality. A summary research scheme was outlined for each area of interest. The main achievements emerging from the promotion of the network of Peruvian universities for climate change adaptation in Ancash came from the water quality group. Firstly, TMI, UNASAM and UPCH-EL cooperated closely to develop a trial smartphone application using macro-invertebrates to assess and map water quality. Secondly. TMI-UNASAM and UPCH-EL successfully cooperated in the elaboration of a research proposal to explore technologies to mass-produce native plants with capacity to clean metals from water polluted with minerals. This is a problem that is growing in areas affected by glacier retreat. The project was funded by the National Program to Improve Innovation, Competitiveness and Productivity (FINCYT) at the Ministry of Production.

In the specific area of wetland and other alpine ecosystems studies, TMI and UNALM-LEUP cooperated with Colorado State University in a research proposal to NSF to develop decision-making models to improve rangeland management and hydrology. Project funding was not successful. TMI and UNALM-LEUP are cooperating with Colorado State on a re-submission, and TMI and UNALM-LEUP produced a proposal to be submitted to Peru's National Program on Agrarian Innovation (PNIA) with results expected for December 2015. TMI and UNASAM cooperated with Michigan Technological University in the submission of a proposal to study carbon in soils of alpine wetlands of Huascaran National Park.

TMI also advocated with the Geophysical Institute of Peru (IGP) to advocate that they include Ancash in their climate research work plans. It is likely that they will start research in Ancash in 2016.

TMI seized the opportunity to attract international research groups to strengthen technical capacities of the UNASAM and generate information needed to support climate change adaptation activities. The alliance with professors J. Sevink and E. Cameraat from University of Amsterdam Institute of Biodiversity and Ecosystem Dynamics (UvA-IBED) is a significant achievement. TMI coordinated with UNASAM and UvA-IBED the implementation of a four-week field course on climate change adaptation which produced detailed field information on the status of soils, ecosystems and water quality in the territory of the *Waraq* municipal commonwealth. The strategic value of this partnership is that it will be replicated every two years in a different municipal commonwealth (July 2016) as a way to generate high-quality information while training national and international students in field methods. TMI maintained good contact with US-based universities that cooperate with partners in the university network supported by the project. TMI participated in the preparation of research proposals with international partners from these universities. International partners included E. Cameraat from University of Amsterdam UvA-IBED; Dr. G. Bowser from Colorado State University working on rangeland management; L. Read from Taft University, with whom TMI cooperated in the development of smartphone applications; and several students interested in climate change from the University of Main, Center for Quaternary Studies who are conducting a study in the territory of *Waraq* municipal commonwealth entitled "Understanding the past, present and future of water resources in the Quebrada Quilcayhuanca, Cordillera Blanca, Peru: Implications of climate variations on the socio- economic value of grasslands and wetlands". The project also created opportunities for international volunteers, like Samuel Kane Hulsey from Middle Tennessee State University and Nathan Hecht from the US Peace Corps.

The second component of IR 1.1 is the development of climate change training programs and internships with students from UNASAM. The main achievement of the internship program was a completed first round of five internships (July 2015) and the initiation of a second round of internships (in September 2015) with nine studies in subjects highly relevant to the elaboration of SNIP project profiles for secure water and livelihoods. Although there are challenges concerning the professional training of students and the need to improve organizational aspects of the internship, the fact is that, at relatively low-costs, Ancash is gaining detailed information of the location and status of their wetlands, forests and fresh water resources that was not available before. For example, the information collected by interns shows that prior data used to prepare irrigation SNIP projects is inaccurate and incomplete to estimate future climate change scenarios.

TMI has attracted students from three Faculties (Environment, Agronomy and Economics) that have complementary support roles for the elaboration of irrigation and environmental SNIP project profiles. We have completed training materials for interns and begun designing a virtual platform to support training and eventually facilitate the transference of the internship program to UNASAM and other public universities. The virtual platform will be inaugurated during FY16/Q1. Student internships in the public university system offer a promising mechanism to increase capacity within the university system to generate basic data necessary to prepare well designed environmental or 'green' SNIP projects.

R1.2. UNASAM meteorology and climate information service (CIIADER) and other laboratories provide decision-makers in local and regional governments with climate analysis and support systems that reduce vulnerability to climate change.

R 1.2 seeks to strengthen CIIADER, the climate laboratory of UNASAM that manages 16 meteorological stations located in Ancash that relay information through satellite inter-phase. The stations were acquired, installed and operated with mining canon, yet they are not budgeted into the recurrent costs of the university. Thus, a financial and business plan are needed in order for the laboratory to be self-sustaining. TMI completed the diagnostic study to draft a detailed scope of work to elaborate the business plan for CIIADER. This business and management plan will be inputs for proposals to the mining canon fund for research. The implementation of this activity was put on hold until the new university authorities signed the agreement with the project to implement the business plan.

The second component of IR 1.2 indicates that TMI will support UNASAM faculty and laboratories in producing research proposals to the mining canon fund managed by the university. UANSAM is one of the public universities in Peru that has substantial, yet underutilized, mining canon funds to invest in applied research to support climate change adaptation. The bottlenecks that explain under-utilization of this financial resources have been described in the diagnostic study made by TMI (2015a). Promoting a research support network to collaborate in the production of proposals (IR 1.1) and the elaboration of business plans for CIIADER (IR 1.2) are strategies to increase production of research proposals. Project partners have not obtained mining canon during this Fiscal year.

R 1.3. Access to meteorological data and early warning systems has been increased.

Improving the capacity of the public university system to generate the data and information necessary to support climate change adaptation does not guarantee that the information will be accessible to decision-makers. Information already collected is rarely shared across state agencies and is even less accessible to decision-makers and the general public.

The first achievement under IR 1.3 was the Climate Roundtable *[Mesa Climática*], promoted by the project, which culminated in the decision by the Regional Government of Ancash to establish the Regional Environmental Information System (SIAR). At the request of the Climate Roundtable, TMI is coordinating with UNASAM two internships to systematize existing hydro-meteorological information and climate change adaptation studies for the Huascaran Biosphere Reserve of Ancash.

The Regional Government of Ancash established the SIAR in September 2015. Establishment of the SIAR required an agreement with MINAM and the assignment of one staff person from the Regional Office of Natural Resources and Environmental Management of Ancash to manage the SIAR. Establishment of the SIAR was a necessary first step to systematizing information inputs.

During Fiscal Year 2015, TMI completed the development of the first smartphone app to collect and map water quality using macro-invertebrates as indicators. This accomplishment involved cooperation across multiple institutions: (i) Professor Picon, UNASAM faculty, who taught water quality courses and tested the app with students and Peace Corp volunteer, N. Hetch; (ii) Dr. R. Loayza from UPCH-EL, who assess the effectiveness of fresh water micro-invertebrates in the Cordillera Blanca to estimate water quality, provided the methodology and revised the app; and (iii) K. Smith, a graduate student at Tuft University, who developed the codes for the app. Public presentation of the app will take place in Q1 of FY16. TMI will discuss strategies for continuing use of the app in Ancash with UNASAM, other national agencies responsible for water quality (e.g. DIGESA and OEFA) and private sector companies with social responsibility programs and interest in water quality (e.g. mining companies).

R2: Develop a program in public investment to support local adaptation plans of action

The *Waraq* municipal commonwealth obtained SNIP approval for a $1,128,000 project to establish an Early Warning System for Glacial Lake Outburst Floods (GLOF) which threaten the city of Huaraz. Although the preliminary studies for this project were conducted by UTA and TMI during the USAID HIMAP project, in FY 2016, "Securing Mountain Water and Livelihoods" supported multiple meetings to share preliminary results, informed the newly elected mayors of Huaraz and Independencia about the growing risk of a GLOF due to climate change, and organized meetings with the Presidency of the Council of Ministers (PCM) and with MEF. In order to ensure implementation of this fund, TMI will provide technical assistance in FY 2016 to prepare an environmental impact assessment and a mitigation plan in accordance with the project EMPR (Indicator USAIDN 3 4.8.2-10)

The USAID indicator for gender inclusion (GNRD-3) shifted from the number of women included in project activities to the percent increase in the index of self-affirmation. TMI established the corresponding baseline for the new indicator with 32 women that completed training in gender and climate change. We cannot report results for this indicator at this point.

The regional government of Ancash, the municipal commonwealths and the network of *regidoras* (women council members) produced several formal documents that are necessary in the process of strengthening their capacity to issue laws, strategies, plans and agreements to address climate change. These were mainly work plans and MOUs with the project to develop climate change adaptation capacities. These documents do not qualify to be counted in Indicator USAID 4.8.2-28 but signal the commitment of these organizations to address climate change issues.

R. 2.1. Municipal commonwealths and the regional government have completed or improved LAPAs and have trained staff to incorporate climate change vulnerability and risk analysis in the design of projects for the National System of Public Investment (SNIP)

The initial diagnostic of municipal commonwealths and municipalities provided insight into the institutional capacities for developing local development projects, generally, and specifically those with environment aspects. It also provided better understanding of institutional capacity for completing the administrative steps needed to be in the position to implement public investment projects.

The sequence of activities planned by the project called for the intensive training of the three municipal commonwealths in local adaptation plans of action (LAPA) followed by training to develop project profiles in the SNIP framework to implement those plans. The managers of the three municipal commonwealths (*Waraq*, *Tres Cuencas* and *Yanamayo*) established a group to foster technical cooperation among them. Managers prepared annual work plans to consolidate their organizations to implement SNIP projects and develop climate change adaptation projects. The project provided technical support and facilitated the participation of managers in key project activities.

Of the three municipal commonwealths, only *Waraq* managed to obtain the SIAF (Integrated Financial Information System) certificate that allows them to receive funds from the municipalities that comprise each commonwealth. From its municipalities, this commonwealth received operational funding, office space and two assistants to support the manager. *Tres Cuencas* completed all the pre-requisites but has not received the SIAF code from MEF yet. *Rio*

Yanamayo did not complete the certification process (see 5.2 Implementation Challenges). Under these circumstances, the managers of the municipal commonwealths and TMI opted for implementing the SNIP diploma in 'green' and irrigation project profiles with the provincial governments located in the territory of each commonwealth and with the Regional Government of Ancash. Two of the managers participated in the diploma. A decision was made to postpone the elaboration of the LAPA planning document to Fiscal Year 2016, so that commonwealths could be in a position to present projects to SNIP.

R 2.2. Municipal and regional governments have increased investment of public funds in local development projects that increase resiliency of natural systems and economies of mountain communities to climate-related threats.

TMI participates in the network of international agencies that cooperate with MEF to promote the incorporation of risk analysis and climate change in public investment projects. TMI's participation has led to coordination with this ministry to organize a training course focusing on environmental or 'green' public investment projects. The course was implemented simultaneously by MEF in Ancash with TMI and with HELVETAS Swiss Inter-cooperation in Cusco and Apurimac. The six-month course is being implemented between August and December 2015. MEF provides a specialist in SNIP elaboration to the academic trainer and TMI to oversee and provide technical assistance to course participants for their project preparation. Thirty-two participants from the Regional Government of Ancash, provincial municipalities and Huascaran National Park are elaborating seven project profiles following the SNIP methodology. Four profiles are for irrigation projects and three are 'green,' wetland conservation projects. Each participating government entity prepares one project and has a team of four people training and working on the design of the project. All the organizations that assigned staff to this training signed a letter of agreement with MEF committing to support participation of their staff throughout the training period. The training process has revealed several challenges (described in section 5.1) and therefore proper assessment of the course will not be possible until the projects are submitted for registration in SNIP by the municipalities.

Once the projects are registered in the SNIP, TMI will initiate a series of activities to help projects move from 'viable' status to full project implementation. (This will take place in Fiscal Year 2016).

The last component of IR 2.2 involved the promotion of climate change adaptation policies in order to provide a favorable environment for the implementation of climate change adaptation projects or actions. With this objective in mind, TMI coordinated the implementation of Ancash Climate Change Strategy with the Regional Government of Ancash and MINAM. TMI provided a technical coordinator to facilitate the process and elaborate the final documents. The process started in August 2015 and will conclude in December 2015. As we have noted above, the elaboration of this strategy has already created the conditions to start the environmental information system (SIAR) of Ancash.

Gender and climate change adaptation

TMI is working closely with '*regidoras',* women who have been elected to positions of government in municipal councils. The project signed a memorandum of understanding with the Network of Ancash Councilwomen (REDRAN). TMI provided training to 42 women elected to

serve in municipal councils throughout Ancash. This first training cycle was implemented in cooperation with Peru's Network of Rural Municipalities (REMURPE). The first cycle focused on gender inclusion and provided trainees with basic knowledge of public administration. The second cycle of training provided the knowledge and skills necessary for conducting a participatory gender diagnostic (PGD). Training was implemented on-site in each one of the three pilot commonwealths, in order to encourage participation of *regidoras* and women leaders of community based organizations. A total of 15 *regidoras* and 17 community women-leaders completed 4 workshops and conducted field work to collect information on the needs of women in connection to climate change impacts. TMI coordinated with national agencies like FONCODES and AGRORURAL that operate community development projects to share results of the PGD and strengthen gender and climate change considerations in their work plans.

TMI also established a baseline with this second group of 42 trainees using the self-affirmation indicators recommended by USAID.

R3: Replicate methods of climate change adaptation at the community level and disseminate training systems at the university and local government levels

TMI concluded 20 studies generated by UNASAM students and staff that support project intervention at the community level, including institutional assessments; rapid rural appraisals of sites in the municipal commonwealths; guides to provide orientation to the innovation approach pursued by the project; technical diagnostics of specific problems faced by communities (such as, poor condition of grasslands, irrigation systems, and forests); and detailed land use maps of vegetation cover, hydrologic systems and freshwater quality (Indicator USAID DO 3 C11). These studies are completing final editorial revision; they will be accessible to the general public through the SIAR and the project web site.

A total of 1,127 people received information and were educated through talks and special events (hosted by the communication division of the project) on the topics of natural resource management, biodiversity conservation and climate change (Indicator USAID C12).

R 3.1. Users of upland ecosystem services have established compensation mechanisms that support highland communities engaged in ecosystem conservation efforts

As a result of the activities implemented by TMI the project has secured in the Huascaran Biosphere Reserve an institutional framework for the compensation mechanisms so that they will have continuity after the project ends. TMI completed a diagnostic study of water and conflicts, stakeholders and opportunities to engage upland and lowland water users in Huascaran Biosphere Reserve (HBR). TMI, then, adapted the activities to take advantage of the approval of national legislation to promote payment for ecosystem services, Law 30215 of 'Retribution Mechanisms for Ecosystem Services' (MRSE), approved in 2014. Next, TMI identified partners to implement MRSE, shared the results of the diagnostic studies, and supported a visit to Moyobamba in San Martin for representatives from HNP and TMI and one representative of the management committee of the HBR. This visit allowed representatives to learn first-hand from implementers of one of the most advanced ecosystem services compensation mechanisms in the country. As a result of this process, TMI coordinated with Huascaran National Park (HNP) the implementation of a support group [*Grupo Impulsor*] for MRSE. The support group is comprised of HNP, the management committee of the HBR, CARE, INAIGEM and TMI. TMI has facilitated the participation of MINAM to provide training to the *Grupo Impulsor* and has initiated coordination

with the Superintendence of Water and Sanitation (SUNASS) to explore the possibility of establishing MRSE sites with PSE Chavin, which is the potable water company servicing the provinces of Aija, Bolognesi, Huaraz and Huaylas.

R 3.2. Community-based groups have increased their capacity to design, finance and implement livelihood projects accessing public funds that reduce their vulnerability to climate change.

Rural communities respond to pressures affecting their livelihood objectives. They adapt their production systems in multiple ways in response to demographic, economic, market or climatic stressors. The project aims to introduce climate analysis considerations at the level of community-based organizations and local development agencies.

The first step was to conduct three rapid rural appraisal studies in areas that are representative of the larger territories of the three municipal commonwealths. A second, more detailed study, of perceptions of risk and climate change was conducted with co-funding from UNESCO Science Office in Peru. We followed the technical parameters indicated in MEF's guide for the formulation of public investment profiles in order to generate information that can be then used for the formulation of projects with government funds.

TMI complemented the rapid rural appraisal exercises with two additional short studies to identify rural innovations and tendencies. This was done through the review of secondary sources and the completion of one workshop attended by representatives of the User Committees of the Huascaran Biosphere Reserve. During the implementation of the diagnostic studies, local stakeholders in municipalities and rural communities located in the three municipal commonwealths identified eight initiatives that responded directly to climate vulnerability. TMI begun the process of supporting these projects by conducting more detailed assessments with local participation. The topics (and communities) were: (i) development of phyto-remediation technologies in response to water pollution in areas affected by glacier recession (Shallap and Canrey); (ii) identification of additional value for wetland areas through the promotion of ecotourism (Los Andes); (iii) improvement of agricultural systems affected by climate impacts and other factors (Cahuide) ; (iv) development of private community conservation areas to protect water sources (Aquia); (v) improvement of native pastures to secure feed for animals and fresh water for cheese production (Aquia, Canrey); (vi) development of small hydroelectric power to expand the agricultural frontier to areas without water; (vii) family water reservoirs and irrigation systems (Santa Cruz); (viii) improvement of hut construction in high-altitude pastureland areas to reduce the impact of extreme cold weather events.

TMI is working on small community projects identified by communities. These projects represent the development objectives of the communities. The objective of TMI is to develop tools and processes that support the incorporation of climate analysis in small projects proposed by rural communities and the national agencies that work at this level. Some of the diagnostic studies have already provided the basis for incorporating government agencies into the process. For example, two project initiatives to support phyto-remediation of the Shallap canal and to guarantee its water supply obtained the highest scores in the participatory budget of Huaraz province.[1] The two proposals received allocation of funds in the participatory budget for the equivalent of US$23,000 and US$46,000, respectively (these were postponed due to reallocation of funds in preparation of

[1] These projects were (i) "Creation of a bioremediation system to improve water quality in the Shallap-Huapish-Tocalla Canal", and (ii) "Creation of a secondary distribution system of the Shallap-Huapish-Tocalla Canal"

El Niño events). Similarly, the study in Cahuide prompted the Ministry of Agriculture in Ancash to select this valley to develop a pilot case under its PLAN-GRACC budget (Plan for Risk Management and Climate Change in the agricultural sector). TMI is cooperating with these agencies to raise the funds required for the implementation conservation projects that reduce vulnerability.

R 3.3. Grassroots groups are organized to conduct participatory action research in the municipal commonwealths.

TMI concentrated its efforts in the preparation of several instruments that will support the implementation of activities under this IR in FY 2016. TMI (i) produced one document on concepts to describe its approach to rural innovation and climate change adaptation, (ii) one study presenting pre-Hispanic geohydrology technologies of the Ancash region that functioned to retain and release water in high-altitude watersheds of the Blanca and Negra ranges of Ancash, and (iii) know-how transference from TMI Piura staff with extensive expertise in business plan development and rural innovation in mountain communities. TMI also prepared training materials to introduce participatory methods in rural development to UNASAM students.

The report on ancestral water management technologies was presented at a national conference in Arequipa (August 26, 2015) and discussed with MINAM and the Ministry of Culture officers the opportunities to support the restoration of these technologies.

Implementation of participatory action research will start in FY 2016.

R 3.4 Systems to disseminate and replicate training tools, adaptation methods and successful experiences are operational and have been institutionalized.

TMI communicates milestones, results, and information on climate change adaptation through their website (http://www.mountain.pe/noticias/) and Facebook (Instituto de Montaña) page. The Facebook page reached its first 2,000 followers at the end of FY 2015. The communication division made a special effort to distribute project results amongst the UNASAM community.

During FY 2015, TMI, in cooperation with USAID, seized the opportunity to disseminate project results and to strengthen relationships with the Ministry of Environment during the COP20 event (Lima, December 1-12, 2015). Additionally, the Chief of Party shared the project concept and preliminary results in a dozen events at the request of project partners or other relevant stakeholders, including the National Congress of Peru, IPROGA, MINAM, SERNANP, UNALM-LEUP, UPCH-EL, among others.

During FY 2015 the project completed the design of a virtual platform to support UNASAM students participating in the internship and as a repository for the studies produced by the project and the internship program. This platform will be implemented in Q1 of FY 2106. If the project demonstrates it effectiveness during its pilot phase, it will evolve as a distance learning tool that will reach large numbers of students.

5.2. Implementation Challenges

The main challenges and responses to project implementation are outlined below:

- The business plans for the laboratories at UNASAM could not proceed as planned due to the enactment of the new "University Law" (30220, July 9, 2014), which mandates changes in the university by-laws and election of new authorities. Thus, the signing of agreements with UNASAM was delayed. TMI has re-initiated the process with the newly elected authorities (August 2015) and expects to have the agreement documents ready in early FY 2016.

  In response to this administrative challenge, TMI is focusing its support to UNSAM on services provided by the public university –e.g. support to research initiatives, student internships, development of smartphone apps, and volunteer student activities– that do not require performance contracts or MOUs.

- The participation of UNASAM faculty in research initiatives is limited due to multiple factors which affect the activation of the canon tax reserved to promote applied research. Faculty experience administrative difficulties both with the grant competition process and with managing grants. The current system does not allow grantees to reduce teaching loads and lacks general performance incentives, such as, salary improvements.

  Potential solutions involve convincing university authorities to develop agreements with CONCYTEC to outsource competition over university research funds available through the canon tax and administrative tasks. TMI is cooperating with UNESCO Science Office in Peru to encourage this agreement with CONCYTEC and promote development of a 'UNESCO Chair' program dedicated to mountain ecosystem management.

- The three municipal commonwealths are at different stages in becoming fully operational. *Waraq* has completed all of its administrative requirements and has obtained approval for its first SNIP project to develop an early warning system for GLOF events. *Tres Cuencas* has completed its administrative requirements but still has to receive its SIAF code to implement activities with public funds. However, *Tres Cuencas* has played a key role in launching the official process to establish the Water Resources Councils for the *Pativilca* and *Fortaleza* rivers. The *Rio Yanamayo* Municipal Commonwealth was not able to advance with this process due to political tensions between members of the commonwealth.

  TMI's position on this difficulty of uneven progress among these three project partners is that municipal commonwealths are possibly the best means to implement local, integrated climate change adaptation policies and actions over relatively large, yet manageable territories. We plan to educate the mayors who make up the Board of Directors of each commonwealth about the approval of new norms in Peru that will support implementation of water management projects in their municipalities. We will also organize a high-level event with elected authorities to discuss why are these pilot commonwealths and others that share the mission to conserve natural resources and water well positioned to take advantage of 'green' SNIP project typologies and similar funds like the MRSE program.

6. MONITORING AND EVALUATION

6.1. Overview

Monitoring and evaluation (M&E) offers a tool to assess the project at the task-level and activity-level. The M&E officer provided technical support to organize the project reporting. The M&E system in place is based on weekly planning of activities prepared by the leaders of each one of the three project components. These weekly planners set priorities for the week and facilitate coordination with the Chief of Party (COP). Each component leader organizes a detailed monthly Google calendar and the M&E officer collates all component leaders' calendars showing shared activities and most significant events for the month. Each component leader also produces a monthly report of activities and project documents (field, workshop or meeting reports). The M&E officer provides quality control of documents, comparing products against a checklist to improve form and content and ensuring that the USAID marking and branding protocol is followed and that the documents follow the TMI 'Style Guide.' Finally, the M&E officer coordinates images from a professional photographer who is providing the project with high-quality photographs to support the elaboration of success stories that communicate the results of the project.

The M&E officer maintains a website that provides TMI staff and USAID access to the main products of the project (www.mountain.pe/gestion).

The evaluation component involved preparing drafts of quarterly reports to be discussed between the COP, field coordinator, and the project team. Evaluation interviews with project beneficiaries were also completed to receive feedback on project implementation. Between June and September, the M&E officer organized a set of workshops that introduced the 'Open Standards' (OS) methodology to TMI. This exercise was conducted with technical assistance from Foundations of Success, the organization that developed the OS methodology. This exercise provided the team with the opportunity to assess the implementation of the project, the logic of implementation, and the stakeholders with whom the project partners. As a result of the analysis, the team was able to re-organize project activities, team roles, and Annual Work Plans for the remainder period of the project. Also, as a result of this process, TMI will adopt the use of MIRADI, the Open Standards software, to track project advances.

6.2 Baseline and other studies

The M&E officer produced and/or supported elaboration of the following documents during the year:

Type of Document	Title	Description
Project Management	Environmental Management Plan and Report (EMPR) of the project	Describes the condition set by USAID for each main activity of the project.
Project Management	Baseline study	Describes the status of USAID indicators at the start of the project. The baseline is based on detailed diagnostics conducted for each one of the three results of the project

Type of Document	Title	Description
Project Management	Work plan and Gantt chart of the M&E officer	Detailed presentation of the work plan of M&E
Three Year Work Plan excel data bases	General Three Year Work Plan- POG	Excel formats to track project tasks, products, and value the advancement of the project
Project management	Performance Monitoring Plan (PMP)	Based on the protocols established by USAID for the PMP, described the monitoring methodology and the parameters to assess the quality of information and the means of verification
Project management	Tracking Table for USAID Indicators	USAID Indicators showing the targets and the annual advances
Project Management	Monthly Reports	Describing the advance of the project in each component (means of verification)

6.3 Monitoring and Evaluation: Table of Project Indicators

Code	Description	FY: 2015			FY 15 Quarter 1		FY 15 Quarter 2		FY 15 Quarter 3		FY 15 Quarter 4		FY 15 Summary October 1, 2014 to September 30, 2015		
		Unit of Measurement	Tangible Target over Life of Project	Tangible target FY 2015	P	E	P	E	P	E	P	E	P	E	Dif.
R1	**Develop a university network to provide technical assistance in climate change adaptation to local governments and communities**														
IR 1.1	**UNASAM has the capacity and the systems for: student training, conduct relevant applied research on adaptation to climate change, and implement effective extension services to support local and regional governments of Ancash.**														
1.1.1.	Establishment of the inter-university platform				**2**	**2**	**5**	**4**	**4**	**2**	**2**	**0**	**13**	**8**	**5**
1.1.1.1.	*Coordination with universities (UNMSM, UNALM, PUCP, UNCH).*	Meetings	4	4	2	2	**2**	**2**	**0**	**0**	**0**	**0**	**4**	**4**	**0**
1.1.1.2	*Elaboration of agenda for cooperation*	Plan	1	1	0	0	**1**	**1**	**0**	**0**	**0**	**0**	**1**	**1**	**0**
1.1.1.3	*Establish agreements to cooperate with universities*	Document	11	3	0	0	**1**	**0**	**1**	**0**	**1**	**0**	**3**	**0**	**3**
1.1.1.4	*1st meeting of the university network*	Plan	1	1	0	0	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**1**
1.1.1.5	*Meetings of sub-groups (water quality, hydrology/climate, ecosystems)*	Meetings	2	2	0	0	**1**	**1**	**1**	**1**	**1**	**0**	**3**	**2**	**1**
1.1.1.6	*Elaborate brochure of the university network*	Brochure	1	1	0	0	**0**	**0**	**1**	**1**	**0**	**0**	**1**	**1**	**0**
1.1.2	Development of climate change adaptation training, research and extension capabilities				**1**	**1**	**6**	**3**	**6**	**5**	**5**	**1**	**18**	**10**	**8**
1.1.2.1	*Workshop to design training materials*	Workshops	2	2	1	1	**2**	**0**	**0**	**0**	**0**	**0**	**3**	**1**	**2**

Code	Description	FY: 2015			FY 15 Quarter 1		FY 15 Quarter 2		FY 15 Quarter 3		FY 15 Quarter 4		FY 15 Summary October 1, 2014 to September 30, 2015		
		Unit of Measurement	Tangible Target	Tangible target	P	E	P	E	P	E	P	E	P	E	Dif.
1.1.2.2	*Diagnostic, assessment of needs and opportunities for research and training at UNASAM - FCAM*	Document	1	1	0	0	**1**	**1**	**0**	**0**	**0**	**0**	**1**	**1**	**0**
1.1.2.3	*Improve and validate training materials (guides)*	Guides	5	7	0	0	**1**	**0**	**4**	**3**	**2**	**1**	**7**	**4**	**3**
1.1.2.4	*Design and develop training program*	Course	4	3	0	0	**1**	**1**	**1**	**1**	**1**	**0**	**3**	**2**	**1**
1.1.2.5	*Deliver courses on research and climate change adaptation*	Course	5	3	0	0	**1**	**1**	**1**	**1**	**1**	**0**	**3**	**2**	**1**
1.1.2.6	*Design and validate the curriculum for a training at diploma level on climate change adaptation*	Curriculum	1	1	0	0	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**0**	**1**
1.1.3.	Generation of education policies and systems for climate change adaptation training, research and extension services				**0**	**0**	**2**	**2**	**4**	**1**	**2**	**0**	**8**	**3**	**5**
1.1.3.1	*Diagnostic study of policies and training systems at UNASAM - FCAM - OEUYPS*	Document	1	1	0	0	**1**	**1**	**1**	**1**	**0**	**0**	**2**	**2**	**0**
1.1.3.2	*Agreements to cooperate with FCAM /OEUYPS.*	Agreement	1	1	0	0	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**1**
1.1.3.3	*Workshops: Institutional Development Framework IDF for FCAM, OEUYPS*	Workshops	4	2	0	0	**1**	**1**	**1**	**0**	**0**	**0**	**2**	**1**	**1**
1.1.3.4	*Follow up with IDF*	Plan	2	2	0	0			**1**	**0**	**1**	**0**	**2**	**0**	**2**
1.1.3.5	*Systematization of the IDF process*	Document	1	1	0	0			**0**	**0**	**1**	**0**	**1**	**0**	**1**
1.1.4	Design and implementation of climate change adaptation applied research and extension program		**42**	**20**	**4**	**3**	**9**	**7**	**4**	**2**	**4**	**0**	**21**	**12**	**9**
1.1.4.1	*Workshop: define research lines for student training (pasantía) UNASAM*	Plan	1	1	1	1	**1**	**1**	**0**	**0**	**0**	**0**	**2**	**2**	**0**
1.1.4.2	*Coordinate Pasantias with faculty and students UNASAM*	Meetings	12	8	2	1	**1**	**1**	**3**	**2**	**2**	**0**	**8**	**4**	**4**
1.1.4.3	*Protocols for the selection of pasantias*	Protocol	1	1	1	1	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**0**

Code	Description	FY: 2015			FY 15 Quarter 1		FY 15 Quarter 2		FY 15 Quarter 3		FY 15 Quarter 4		FY 15 Summary October 1, 2014 to September 30, 2015		
		Unit of Measurement	Tangible Target	Tangible target	P	E	P	E	P	E	P	E	P	E	Dif.
1.1.4.4	*Implementation of 07 research projects through pasantias*	Internships	21	7	0	0	**7**	**5**	**0**	**0**	**0**	**0**	**7**	**5**	**2**
1.1.4.5	*Design the strategy for cooperaiton with OEUYPS (volunteers).*	Strategy	1	1	0	0	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**0**	**1**
1.1.4.6	*Elaborate a research proposal accesing canon tax funds*	Proposal	5	1	0	0	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**1**
1.1.4.7	*Elaborate a brochure describing training program of pasantias*	Brochure	1	1	0	0	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**0**	**1**
IR 1.2	**The CIAD and other laboratories provide decision makers in local and regional governments, climate analysis and support systems to reduce vulnerability to climate change.**														
1.2.1.	Support to the implementation of the business plan for UNASAM laboratory services			**6**	**0**	**0**	**2**	**1**	**1**	**1**	**3**	**0**	**6**	**2**	**4**
1.2.1.1.	*Diagnostic study of the services provided by FCAM laboratories*	Document	1	1	0	0	**1**	**1**	**0**	**0**	**0**	**0**	**1**	**1**	**0**
1.2.1.2	*Elaborate agreements with stakeholders involved in these laboratories*	Agreement	3	2	0	0	**1**	**0**	**0**	**0**	**1**	**0**	**2**	**0**	**2**
1.2.1.3	*Communication materials presenting the services of the laboratories*	Plan	5	2	0	0	**0**	**0**	**0**	**0**	**2**	**0**	**2**	**0**	**2**
1.2.1..4	*Elaborate SOW for the specialist in business plans*	SOW	2	1	0	0	**0**	**0**	**1**	**1**	**0**	**0**	**1**	**1**	**0**
1.2.2.	Development of research initiatives of laboratories		**16**	**8**	**0**	**0**	**0**	**0**	**3**	**0**	**1**	**1**	**4**	**1**	**3**
1.2.2.1.	*Exchange experiences and cooperation among universities*	Agreement / project	4	2	0	0	**0**	**0**	**1**	**0**	**1**	**1**	**2**	**1**	**1**
1.2.2.2	*Workshop to promote UNASAM projects with canon funds*	Plan	1	1	0	0	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**1**
1.2.2.3	*Present research projects to competition of canon*	Project	3	1	0	0	**0**	**0**	**1**	**0**		**0**	**1**	**0**	**1**

Code	Description	FY: 2015			FY 15 Quarter 1		FY 15 Quarter 2		FY 15 Quarter 3		FY 15 Quarter 4		FY 15 Summary October 1, 2014 to September 30, 2015		
		Unit of Measurement	Tangible Target	Tangible target	P	E	P	E	P	E	P	E	P	E	Dif.
	tax funds										0				
IR 1.3	**Access to meteorological data and early warning systems has been increased**														
1.3.1.	Development of technical roundtable for generating climatological data		**8**	**4**	**0**	**0**	**1**	**1**	**2**	**0**	**1**	**1**	**4**	**2**	**2**
1.3.1.1.	*Stakeholders map related to climatological and hydrologic information*	Document	1	1	0	0	**1**	**1**	**0**	**0**	**0**	**0**	**1**	**1**	**0**
1.3.1.2	*Agreements by members of the climate roundtable*	Agreement	6	2	0	0	**0**	**0**	**1**	**0**	**1**	**1**	**2**	**1**	**1**
1.3.1.3	*Climate roundtable work plan*	Document	1	1	0	0	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**1**
1.3.2.	Design and operation of an efficient management system for climate change climatological information		**10**	**9**	**0**	**0**	**0**	**0**	**5**	**2**	**3**	**2**	**8**	**4**	**4**
1.3.2.1.	*Design process for pilot app*	App	2	1	0	0	**0**	**0**	**1**	**1**	**0**	**0**	**1**	**1**	**0**
1.3.2.2	*Present the concept of app for climate change to FCAM – UNASAM.*	Document	1	1	0	0	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**0**	**1**
1.3.2.3	*Work plan: app for climate change information gathering.*	Plan	2	2	0	0	**0**	**0**	**0**	**0**	**2**	**1**	**2**	**1**	**1**
1.3.2.4	*Identify needs of information*	Document	1	1	0	0	**0**	**0**	**1**	**1**	**0**	**0**	**1**	**1**	**0**
1.3.2.5	*Assess uses and potential applications of app*	Document	1	1	0	0	**0**	**0**	**1**	**0**	**0**	**1**	**1**	**1**	**0**
1.3.2.6	*Sustainability strategy for app operation*	Proposal	1	1	0	0	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**1**
1.3.2.7	*Protocols and development of the data bases to collect app information at CIAD*	Report	2	2	0	0	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**1**
Result 2	**Develop a program in public investment to support local adaptation plans of action**														

Code	Description	FY: 2015			FY 15 Quarter 1		FY 15 Quarter 2		FY 15 Quarter 3		FY 15 Quarter 4		FY 15 Summary October 1, 2014 to September 30, 2015		
		Unit of Measurement	Tangible Target	Tangible target	P	E	P	E	P	E	P	E	P	E	Dif.
2.1.	**Municipal commonwealth and regional government have completed or improved PAAL plans and have trained personnel to incorporate analysis of climate change vulnerability and risk analysis in the design of projects for the National Public Investment System (SNIP).**														
2.1.1.	Design of institutional development plans (IDPs) and cooperative agreements				**3**	**3**	**4**	**2**	**6**	**1**	**2**	**0**	**15**	**6**	**9**
2.1.1.1	*Formal establishment of the managers network*	Document	1	1	0	0	**1**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**
2.1.1.2	*Agreements signed with municipal commonwealths*	Agreements	4	6	3	3	**0**	**0**	**3**	**0**	**0**	**0**	**6**	**3**	**3**
2.1.1.3	*Diagnostic study of pilot municipal commonwealths*	Report	1	1	0	0	**1**	**1**	**0**	**0**	**0**	**0**	**1**	**1**	**0**
2.1.1.4	*Work plans for the network of managers*	Meetings	12	6	0	0	**2**	**1**	**2**	**1**	**2**	**0**	**6**	**2**	**4**
2.1.1.5	*Develop an Institutional Development Framework IDF for the network of managers*	Workshops	3	3	0	0	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**1**
2.1.2.	Implementation of a training program and technical assistance in the design of projects under the ACC				**0**	**0**	**0**	**0**	**1**	**1**	**3**	**0**	**4**	**1**	**3**
2.1.2.1	*Training in methods of local adaptation plan (LAPA)*	Workshops	3	2	0	0	**0**	**0**	**0**	**0**	**2**	**0**	**2**	**0**	**2**
2.1.2.2	*Introductory training on 'green' SNIP*	Workshops	2	2	0	0	**0**	**0**	**1**	**1**	**1**	**0**	**2**	**1**	**1**
2.1.2.3	*Systematization of the training in SNIP*	Document	1	0	0	0	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
2.1.2.4	*Strengthening of the Councilwomen (regidoras) network*	Workshops	4	4	0	0	**0**	**0**	**3**	**2**	**1**	**0**	**4**	**2**	**2**
2.1.2.5	*Strengthening capacities of councilwomen and local leaders to assess gender and climate change needs*	Workshops	8	6	0	0	**1**	**0**	**2**	**1**	**3**	**3**	**6**	**4**	**2**
2.1.2.6	*Strengthening capacities of councilwomen in*	Workshop	1	1	0	0	**1**	**1**	**0**	**0**	**0**	**0**	**1**	**1**	**0**

Code	Description	FY: 2015			FY 15 Quarter 1		FY 15 Quarter 2		FY 15 Quarter 3		FY 15 Quarter 4		FY 15 Summary October 1, 2014 to September 30, 2015		
		Unit of Measurement	Tangible Target	Tangible target	P	E	P	E	P	E	P	E	P	E	Dif.
	public administration														
2.2.	**Regional and municipal governments have increased investment of public funds in local development projects that increase the resilience of natural systems and economies of mountain communities to climate-related threats.**														
2.2.1.	Design and implementation of technical assistance and financial management program				**0**	**0**	**1**	**1**	**3**	**3**	**42**	**33**	**46**	**37**	**9**
2.2.1.1	*Call to potential participants*	Participants	40	33	0	0	**0**	**0**	**0**	**0**	**40**	**33**	**40**	**33**	**7**
2.2.1.2	*Develop training program in 'green' SNIP projects.*	Program	1	1	0	0	**0**	**0**	**1**	**1**	**0**	**0**	**1**	**1**	**0**
2.2.1.3	*Elaborate SOW for training in 'green' SNIP*	SOW	1	1	0	0	**0**	**0**	**1**	**1**	**0**	**0**	**1**	**1**	**0**
2.2.1.4	*Search and hire specialist in SNIP*	Contract	1	1	0	0			**1**	**1**	**0**	**0**	**1**	**1**	**0**
2.2.1.5	*Implement course on 'green' SNIP projects (Completed)*	Course	1	0	0	0	**0**	**0**	**0**	**0**	**0**	**0**			
2.2.1.6	*Agreements to implement PIPs with climatic change focus.*	Agreements	2	2	0	0	**0**	**0**	**0**	**0**	**2**	**0**	**2**	**0**	**2**
2.2.1.7	*PIPs with climate change focus incorporated in government budget*	Projects	6	0	0	0	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	
2.2.1.8	*Support incorporation of municipal commonwealths in the F.I.D.A (canon regional fund)*	Agreements	1	0	0	0	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
2.2.1.9	*Train local governments in financial aspects CONECTAMEF (including transferring resources to commonwealths)*	Workshops	1	1	0	0	**1**	**1**	**0**	**0**	**0**	**0**	**1**	**1**	**0**
2.2.1.10	*Presentation of 'green' SNIP projects (results and prospects)*	Modules	2	2	0	0	**0**	**0**	**0**	**0**	**2**	**2**	**2**	**2**	**0**
2.2.1.11	*Systematization of course on 'green' SNIP projects*	Document	1	0	0	0	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	

Code	Description	FY: 2015			FY 15 Quarter 1		FY 15 Quarter 2		FY 15 Quarter 3		FY 15 Quarter 4		FY 15 Summary October 1, 2014 to September 30, 2015		
		Unit of Measurement	Tangible Target	Tangible target	P	E	P	E	P	E	P	E	P	E	Dif.
2.2.2.	Generation and registration of PIPs				**1**	**1**	**0**	**0**	**0**	**0**	**1**	**1**	**2**	**2**	**0**
2.2.2.1	*Diagnostic study of existing, approved projects in SNIP that support water security*	document	1	1	1	1	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**0**
2.2.2.2	*Action plan and timeline to incorporate PIPs in budgets.*	Projects	6	1	0	0	**0**	**0**	**0**	**0**	**1**	**1**	**1**	**1**	**0**
2.2.2.3	*Follow up action plan*	Plan	1	0	0	0	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
2.2.2.4	*Support participation of commonwealths in FONIPREL competitions, 'Obras por impuestos' and other sources of funding for PIPs*	Reports	4	0	0	0	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
2.2.2.5	*Meetings with mayors and council members to advocate for 'green' project funding*	Workshops	4	0	0	0	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
2.2.3.	Development of technical and dialogue platform				**2**	**1**	**2**	**0**	**10**	**4**	**6**	**2**	**20**	**7**	**13**
2.2.3.1	*Asses opportunities to promote climate change policies in the Ancash Region (meetings)*	Reports	4	6	2	1	**2**	**0**	**2**	**1**	**0**	**0**	**6**	**2**	**4**
2.2.3.2	*Meetings to promote public investment in climate change*	MOU	6	6	0	0	**0**	**0**	**4**	**1**	**2**	**1**	**6**	**2**	**4**
2.2.3.3	*Establish agreements*	Meetings	11	6	0	0	**0**	**0**	**4**	**2**	**2**	**1**	**6**	**3**	**3**
Result 3	**Replicate methods of climate change adaptation at the community level and disseminate training systems at the university and local government levels**														
3.1.	**Users of highland ecosystem services, have established compensation mechanisms that support communities of the highlands involved in ecosystem conservation efforts**														
3.1.1.	Compilation of information on experiences, stakeholders and existing and potential compensation mechanisms or PES				**0**	**0**	**1**	**1**	**1**	**1**	**2**	**0**	**4**	**2**	**2**
3.1.1.1	*Conceptual framework PES*	Document	1	1	0	0	**1**	**1**	**0**	**0**	**0**	**0**	**1**	**1**	**0**

Code	Description	FY: 2015			FY 15 Quarter 1		FY 15 Quarter 2		FY 15 Quarter 3		FY 15 Quarter 4		FY 15 Summary October 1, 2014 to September 30, 2015		
		Unit of Measurement	Tangible Target	Tangible target	P	E	P	E	P	E	P	E	P	E	Dif.
3.1.1.2	*Map stakeholders and water conflicts in Ancash*	Document	1	1	0	0	**0**	**0**	**1**	**1**	**0**	**0**	**1**	**1**	**0**
3.1.1.3	*Identify best experiences in PES in Peru*	Document	1	1	0	0	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**0**	**1**
3.1.1.4	*Prepare introductory materials*	Document	1	1	0	0	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**0**	**1**
3.1.2.	Consultations on and planning of compensation mechanisms on PES				**0**	**0**	**0**	**0**	**1**	**1**	**3**	**0**	**4**	**1**	**3**
3.1.2.1	*Identify innovations in the region*	Document	1	1	0	0	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**0**	**1**
3.1.2.2	*Form stakeholder group*	Group	1	1	0	0	**0**	**0**	**1**	**1**	**0**	**0**	**1**	**1**	**0**
3.1.2.3	*Studies of the geographic and hydrologic characteristic of sites*	Study	1	1	0	0	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**0**	**1**
3.1.2.4	*Provide training in PES*	Workshops	4	1	0	0	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**0**	**1**
3.2.	**Networks of community-based groups that are innovative technologies or operate institutional arrangements that reduce climate risks have increased capacity to design, finance and implement projects for economic competitiveness, through public funds, reducing their vulnerability to climate change**														
3.2.1.	Assessment of CCA innovations based on local knowledge and practices (TMI experiences)				**0**	**0**	**2**	**1**	**0**	**0**	**0**	**0**	**2**	**1**	**1**
3.2.1.1	Elaborate conceptual framework on innovations	Document	1	1	0	0	**1**	**0.5**	**0**	**0**	**0**	**0**	**1**	**0.5**	**0.5**
3.2.1.2	Present innovations identified	Document	1	1	0	0	**1**	**0.5**	**0**	**0**	**0**	**0**	**1**	**0.5**	**0.5**
3.2.2.	Assessment of pilot sites based on development objectives, climate change threats and affected resources				**2**	**1**	**2**	**1**	**0**	**0**	**0**	**0**	**4**	**2**	**2**
3.2.2.1	Diagnostic study of local sites in 3 municipal commonwealths	Document	1	1	0	0	**1**	**0.5**	**0**	**0**	**0**	**0**	**1**	**0.5**	**0.5**
3.2.2.2	Secondary information	Document	1	1	1	0.5	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0.5**	**0.5**
3.2.2.3	Primary information	Document	1	1	1	0.5	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0.5**	**0.5**

Code	Description	FY: 2015			FY 15 Quarter 1		FY 15 Quarter 2		FY 15 Quarter 3		FY 15 Quarter 4		FY 15 Summary October 1, 2014 to September 30, 2015		
		Unit of Measurement	Tangible Target	Tangible target	P	E	P	E	P	E	P	E	P	E	Dif.
3.2.2.4	Organize diagnostic document	Document	1	1	0	0	**1**	**0.5**	**0**	**0**	**0**	**0**	**1**	**0.5**	**0.5**
3.2.3.	Identification of climate change adaptation innovations based on local knowledge and practices (extant and past community experiences)				**0**	**0**	**0**	**0**	**1**	**1**	**3**	**0.5**	**4**	**1.5**	**2.5**
3.2.3.1	Map innovators and innovations	Maps	2	1	0	0	**0**	**0**	**1**	**1**	**0**	**0**	**1**	**1**	**0**
3.2.3.2	Climate Change vulnerability analysis (perceptions study)	Document	1	1	0	0	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**0**	**1**
3.2.3.3	Communication materials on innovations for adaptation, including ancestral technologies	Document	1	1	0	0	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**0**	**1**
3.2.3.4	Geographic information of municipal commonwealths	Maps	2	1	0	0	**0**	**0**	**0**	**0**	**1**	**0.5**	**1**	**0.5**	**0.5**
3.2.4.	Design and management of innovative climate change adaptation projects				**0**	**0**	**0**	**0**	**0**	**0**	**10**	**2.5**	**10**	**2.5**	**7.5**
3.2.4.1	Opportunities to co-finance small projects	Document	1	1	0	0	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**0**	**1**
3.2.4.2	Training in small project and business plan development	Workshops	1	1	0	0	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**0**	**1**
3.2.4.3	Elaborate and present community projects	Projects	8	4	0	0	**0**	**0**	**0**	**0**	**4**	**2.5**	**4**	**2.5**	**1.5**
3.2.4.4	Report on innovation and climate change adaptation	Reports	8	4	0	0	**0**	**0**	**0**	**0**	**4**	**0**	**4**	**0**	**4**
3.3.	**Community-based groups have been organized to conduct participatory action research in municipal commonwealth**														
3.3.1.	Development of operational framework of PAR and small-scale projects				**0**	**0**	**0**	**0**	**0**	**0**	**3**	**1**	**3**	**1**	**2**
3.3.1.1	Revise concepts and methods of participatory action research (PAR)	Workshops	2	2	0	0	**0**	**0**	**0**	**0**	**2**	**0**	**2**	**0**	**2**
3.3.1.2	Train UNASAM and others in students in PAR	Workshops	1	1	0	0	**0**	**0**	**0**	**0**	**1**	**1**	**1**	**1**	**0**

Code	Description	FY: 2015			FY 15 Quarter 1		FY 15 Quarter 2		FY 15 Quarter 3		FY 15 Quarter 4		FY 15 Summary October 1, 2014 to September 30, 2015		
		Unit of Measurement	Tangible Target	Tangible target	P	E	P	E	P	E	P	E	P	E	Dif.
3.3.2.	Implementation of PAR and small-scale projects				**0**	**0**	**7**	**7**	**8**	**7**	**14**	**8**	**29**	**22**	**7**
3.3.2.1	Identify local researchers and small projects	Groups	18	9	0	0	**3**	**3**	**3**	**3**	**3**	**2**	**9**	**8**	**1**
3.3.2.2	Plan PARs	Workshops	36	12	0	0	**4**	**4**	**4**	**4**	**4**	**4**	**12**	**12**	**0**
3.3.2.3	Agreements with communities to implement small projects with ISF and TMI	Reports	4	2	0	0	**0**	**0**	**0**	**0**	**2**	**2**	**2**	**2**	**0**
3.3.2.4	Implement PARs	PAR	18	4	0	0	**0**	**0**	**0**	**0**	**4**	**0**	**4**	**0**	**4**
3.3.2.5	Assess the impacts an potential of PARs for climate change adaptation	Reports	8	0	0	0	**0**	**0**	**1**	**0**	**1**	**0**	**2**	**0**	**2**
3.3.2.6	Disseminate results of PARs	Workshops	2	0	0	0	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
3.4.	**Dissemination and replication systems of training tools, methods and successful experiences of adaptation is operational and institutionalized**														
3.4.1.	Development of CCA communication materials				**2**	**2**	**3**	**3**	**6**	**6**	**13**	**10**	**22**	**19**	**3**
3.4.1.1	Diagnostic study and communication strategy	Document	2	1	0	0	**0**	**0**	**1**	**1**	**1**	**0**	**2**	**1**	**1**
3.4.1.2	Develop project documents for communication (brochures and others)	Document	1	1	0	0	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**0**	**1**
3.4.1.3	Identify stakeholder groups	Document	1	1	0	0	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**0**	**1**
3.4.1.4	Produce communication materials	Materials	40	20	2	2	**3**	**3**	**5**	**5**	**10**	**10**	**18**	**18**	**0**
3.4.2.	Development of the virtual platform on training, research and dissemination of CCA experiences						**3**	**2**	**2**	**1**	**9**	**1**	**14**	**4**	**10**
3.4.2.1	Prepare SOW for training in web platform	TDR	1	1	0	0	**1**	**1**	**0**	**0**	**0**	**0**	**1**	**1**	**0**
3.4.2.2	Training modules for web platform	Modules	6	6	0	0					**6**	**0**	**6**	**0**	**6**

Code	Description	FY: 2015			FY 15 Quarter 1		FY 15 Quarter 2		FY 15 Quarter 3		FY 15 Quarter 4		FY 15 Summary October 1, 2014 to September 30, 2015		
		Unit of Measurement	Tangible Target	Tangible target	P	E	P	E	P	E	P	E	P	E	Dif.
3.4.2.3	Operate web platform	Platform	3	1	0	0	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**0**	**1**
3.4.2.4	Social networks: disseminate result	Events	12	6	2	1	**2**	**1**	**2**	**1**	**2**	**1**	**6**	**3**	**3**
3.4.3.	3.4.3. Dissemination of project results						**2**	**1**	**2**	**1**	**4**	**1**	**8**	**3**	**5**
3.4.3.1	Itinerant communication: "Voice of the Mountains"	Plan	1	1	0	0	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**0**	**1**
3.4.3.2	Communication network (radio & reporters)	Network	1	1	0	0	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**0**	**1**
3.4.3.3	Participate in fairs, publications, events with project results	Events	12	6	0	0	**2**	**1**	**2**	**1**	**2**	**1**	**6**	**3**	**3**

7. PROJECT MANAGEMENT

In July 2015, TMI conducted a 'theory of change' analysis to assess the assumptions underlying the main activities and outcomes of the project and to sharpen the definition of the expected impacts of the project on adaptation to climate change. TMI Peru implemented this analysis with technical assistance from Foundations of Success, a US-based group that has developed the *Open Standards for the Practice of Conservation* methodology. As a result of the theory of change exercise, the project has developed a more focused conceptual model of the threats posed by climate change in the region and their knock-on effects on natural or engineered systems that regulate water and impact human wellbeing. The results of the exercise were used to improve planning of activities and the monitoring and evaluation systems in the Annual Work Plan FY 2016.

8. BUDGET

Description	FY 2015 Quarter4	Annual FY 2015 Oct 2014-Sep 2015			Project Total		
	Executed	Planned	Executed	%	Planned	Executed	%
R1 Develop a university network to provide technical assistance in climate change adaptation to local governments and communities.	62,343	157,615	158,381	100%	545,540	206,633	38%
R2. Develop a program in public investment to support local adaptation plans of action	26,720	65,399	77,995	119%	199,697	87,917	44%
R3.Replicate methods of climate change adaptation at the community level and disseminate training systems at the university and local government levels	26,777	104,815	90,436	86%	716,267	100,813	14%
Monitoring and Evaluation	16,321	42,162	41,542	99%	161,066	50,065	31%
Project management and Administration	76,408	351,637	322,236	92%	1,289,628	498,242	39%
TOTAL	**208,570**	**721,629**	**690,590**	96%	**2,912,199**	**943,669**	**32%**

Cost Share

Item	Description	FY 2015 Quarter 4	FY 2015 Oct 2014-Sep 2015	Total Life of Project
1	**Projects Managed by TMI Peru**	**156,362**	**504,699**	**869,590**
	a) UICN-Ecosystem Based Adaptation	36,062	205,902	382,557
	b) UICN- Paramos	114,722	292,885	429,570
	c) McKnight Foundation:	0	333	51,884
	d) UNESCO $ 5,578.32	5,578	5,578	5,578
2	**Other Cost Share Local**	**20,420**	**215,277**	**224,648**
	2.1 Other Contributions from TMI	14,840	55,278	64,649
	a) Volunteers	12,840	46,348	48,848
	b) Workshops in-kinds			1,071
	b) TMI-Peru In-Kind	2,000	8,930	14,730
	2.2 Other Contributions from Local Partners	5,580	159,999	159,999
	a) Public sector			
	b) Private sector	5,580	130,746	130,746
	FONAM/MINAM/BID: TMI-UNALM, Restoration of Degraded Wetlands in Huascaran NP, technical parameters for MEF green PIP		125,166	125,166
	SEPIA XVI: Archeological hydraulic systems: contributions to water security in upper watersheds of Ancash.	5,580	5,580	5,580
	c) Contributions from beneficiaries			
3	**PARTNER COST SHARE**	**0**	**29,254**	**29,254**
	University of Texas. Austin (Sub-recipient)		29,254	29,254
	TOTAL	**223,202**	**1,281,275**	**1,123,491**

9. PROJECT CONTEXT AND SUSTAINABILITY

Analysis for the project period, October 1, 2014 to September 31, 2015, is particularly relevant with respect to strategies for sustainability. In order to increase capacity for adaptation to climate change in the Ancash Region, the project cooperates with multiple government and civil society actors at national, regional and local levels. While the project's implementation strategy is anchored with universities, governments and communities at the local level, it is critical that these efforts are framed and supported by national and regional policies. Vice-versa, broader policy climate change adaptation frameworks must take into consideration local realities and needs if they are to be effective or at all useful.

At the national level, TMI is coordinating with the Direction General of Public Investment at MEF, the Direction General of Environmental Research and Information at MINAM, and with environmental laboratories of national universities. MINAM legislation now supports mechanisms for retribution of ecosystem services, a positive change in the policy context that will help the implementation of IR 3.1. Similarly, a SNIP guide was published by MEF which offered guidance for public investment projects to include climate change risk analysis and other methodologies that support the goals of SNIP. TMI has tried to the extent possible to stay connected to these national agencies in order to apply these new tools locally. For example, TMI joined the "Cooperators' Network" (*Red de Cooperantes en gestión de riesgo en contexto de cambio climático en la inversión pública*) of the Direction General of Public Investment (DGIP) at MEF. TMI's involvement helped to link training activities in public investment projects to the official training program of MEF. TMI and the HELVETAS Swiss Inter-cooperation Agency cooperated to design the diploma course which was then implemented with TMI in Ancash and with HELVETAS in two other regions of Peru. MINAM's participation in this network also enabled TMI to begin a dialogue about the preparation of a regional climate change strategy for Ancash.

COP20 presented a unique opportunity for the project to present with USAID results achieved in the HIMAP project and also the planned activities of this project. Though this event demanded time from senior project staff it proved to be a worthwhile effort to share results and gain understanding of opportunities to align this project with Government of Peru national systems.

At the regional level, TMI is working with multiple government actors within the Ancash region, such as, the Regional Office of Natural Resources and Environmental Management, the National University Santiago Antúnez de Mayolo, regional agencies of the Ministry of Agriculture, and several local governments and municipal commonwealths. At the regional and sub-regional levels, there has been a degree of political instability during the present fiscal year, which poses difficulties for implementation. For example, the electoral process to select a new Regional Governor in Ancash (October 2014) resulted in the election of Governor W. Ríos who was not able to take office due to legal constrains until June 2015. This created a vacuum in decision-making that lasted for over half a year. Several of the technical officers, with whom we had been coordinating, were replaced after June 2015. The same electoral process of October 2014 changed almost all local government authorities with whom TMI was cooperating (the one exception was the mayor of the Recuay province). The newly elected leaders started tenure in January 2015, and therefore TMI had to invest time and resources to inform the new authorities of the objectives of the project and activities conducted during the previous months. Key technical positions in local governments are normally replaced by 'trust personnel' [personal de confianza] who come with the new mayor. The change of these officials delayed the implementation of training in the elaboration of SNIP projects. TMI was forced to wait until the new mayors had re-appointed the managers of the municipal commonwealths.

The Government of Peru enacted new legislation for the national system of universities (ley 30220), ordering UNASAM (and all universities in Peru) to elaborate new by-laws adapted to ley 30220 and the subsequent election of new authorities. Due to normative demands of this new legislation, the formal agreements required by TMI to invest in the elaboration of business plans for the environmental laboratories of UNASAM needed to be postponed until after the new authorities were elected (June 2015). Although the reorganization of the university did not affect key activities (e.g. the internship program for students), the disruption of normal operations delayed the schedule of activities with the university. The newly elected authorities have expressed their full support of the project.

During the present year, TMI sought opportunities to partner with national agencies working at the regional and local levels in order to multiply the application of climate change adaptation tools and lessons learned by the project. The effectiveness and sustainability of our activities and outcomes depends in part on the success of TMI in fostering cooperation with and between the multiple state agencies working in Ancash region. TMI has completed and pending MOUs with the following institutions: (i) AGRO-RURAL, the largest agency of the Ministry of Agriculture working in integrated watershed management, (ii) the Regional Office of the Ministry of Agriculture Risk Management and Climate Change Plan (PLANGRACC), and (iii) social programs like FONCODES and JUNTOS to share lessons learned in the area of gender and climate change.

10. SUCCESS STORIES

WATER QUALITY APP SUPPORTS LOCAL COMMUNITIES

(Above) Nathan Hecht, Mountain Institute and Peace Corps Peru Volunteer, presenting water quality results to Mr. Jose Aurelio, representative of the Comunidad Campesina Cauhide.

(Below) University students using a tablet with the "ABI Calculator" App to determine water quality using macroinvertebrates as bioindicators.

Find a map of the project here:

http://calculadora-de-abi.github.io/mapa/

At the top of the world, in the high Andean mountains of Peru, the effects of climate change on water quality are starting to sink in. As the glaciers retreat, melt water comes in to contact with freshly exposed bedrock, which can lead to higher mineral and even heavy-metal levels in mountain streams. Acidic, metal-laden water isn't great for irrigation, let alone human consumption. And the issue is only compounded by local agricultural activities, poor sewage infrastructure, and other human caused contamination. Thus, monitoring mountain water quality has become crucial, but conventional physiochemical water testing can be expensive and hard to access.

Nathan Hecht, a 3rd-year extension Peace Corps Volunteer in Peru, is working on a strategy to confront this problem, thanks to The Mountain Institute's collaboration with USAID on a project called "Securing Mountain Water and Livelihoods." And he's doing so using cellphones.

"One way to think about water quality is from a healthy ecosystem perspective. That's why we're using macro- invertebrates (aquatic insects and arthropods at the bottom of the food chain) as bio-indicators of water quality. We've developed a cellphone App that helps facilitate the process of using macro-invertebrates to determine water quality."

The backbone of the water quality App, or "ABI Calculator" is the Andean Biotic Index (ABI), a biotic index adapted to the Andes that gives scores to macro-invertebrate families based on their sensitivity to contamination. "This gives us a metric to quantify the health of mountain water ecosystems," says Hecht.

The concept for developing this tool was born out of cooperation between The Mountain Institute and Laura Read at Engineers without Borders' CAMBIAR Program. The use of the biotic index was possible thanks to cooperation with Dr. Raul Loayza, of Cayetano Heredia University's Ecotoxicology lab in Lima, who has been using the index in the Cordillera Blanca for over a decade. The App itself was designed and coded by Kevin Smith, a doctoral candidate in environmental engineering at Tufts University.

The App is finding a home at the Santiago Antúnez de Mayolo National University in Huaraz, Ancash. Two undergraduate courses will use the App during the field work portion of the class, in collaboration with various community-based organizations, to test for water quality in mountain streams and lakes important to local communities.

LA TECNOLOGIA AL SERVICIO DE LA COMUNIDAD

(Arriba) Nathan Hecht, un miembo de Cuerpo de Paz trabajando con el Instituto de Montaña, presentando resultados de calidad de agua al Sr. José Aurelio, representante de la Comunidad Campesina Cauhide.

(Abajo) Jóvenes universitarios utilizan una tablet con el App "Calculadora de ABI" para determinar

En la cima del mundo, en los Andes del Perú, los efectos del cambio climático en la calidad de agua se está evidenciando progresivamente. Con el retroceso de los glaciares andinos, las rocas expuestas entran en contacto directo con el agua, lo que causa la movilización de altos niveles de minerales y metales pesados hacia arroyos y ríos. El agua ácida y contaminada es nociva para la biodiversidad y aún más para el ser humano. Este escenario se complica por las actividades agrícolas locales, los desagües que van directamente a los ríos, y otros tipos de contaminación antropogénica. Por ello, el monitoreo de calidad de agua en las montañas es importante, pero los métodos convencionales (fisicoquímicos) son caros y de difícil acceso.

Nathan Hecht, un voluntario del Cuerpo de Paz en su tercer año en Perú, está trabajando en una estrategia frente a este problema, gracias a la cooperación entre el Instituto de Montaña y USAID en el proyecto *Asegurando el Agua y los Medios de Vida en las Montañas*. La respuesta al problema se esta desarrollando con el soporte de celulares.

"Una manera de pensar en la calidad de agua es a partir de la salud de los ecosistemas. Por eso, estamos usando macroinvertebrados (insectos y artrópodos acuáticos en la base de la cadena alimenticia) como bio-indicadores de calidad de agua. Hemos desarrollado un App para celulares que facilita el uso de los macroinvertebrados para determinar la calidad del agua."

La base del App de calidad de agua, o "Calculadora de ABI" es el Índice Biótico Andino (ABI), un índice adaptado a los Andes que asigna un puntaje a cada familia de macroinvertebrados según su sensibilidad a la contaminación. "Eso nos da una medida para cuantificar la salud de los ecosistemas acuáticos de montaña," dice Hecht.

El concepto de desarrollar esta herramienta nació de colaboración entre el Instituto de Montaña y Laura Read del Programa CAMBIAR, de Ingenieros Sin Fronteras. El uso del índice biótico fue posible gracias al colaboración del Dr. Raúl Loayza del laboratorio de Ecotoxicología en la Universidad Peruana Cayetano Heredia en Lima, quien ha investigado el índice en los Andes los últimos 10 años. El mismo App fue diseñado y codificado por Kevin Smith, un candidato doctoral de la Universidad de Tufts en los Estados Unidos.

El App ya cuenta con un centro de aplicación en la Universidad Nacional "Santiago Antúnez de Mayolo" en Huaraz, Ancash. Dos cursos usarán el App durante la parte práctica, en colaboración con varias organizaciones de base comunitaria, para evaluar la calidad de agua en arroyos y lagunas de montaña, que son de interés de las comunidades locales.

La tecnología no sólo nos permite crear herramientas que nos ayudan a manejar y cuidar los recursos naturales de los que dependemos todos, sino también a contar con la colaboración nacional e internacional para hacerlas efectivas.

Se encuentra un mapa del proyecto aquí:

http://calculadora-de-abi.github.io/mapa/

“YO GOBIERNO PARA DESARROLLAR MI PUEBLO”

(Arriba)

Eugenia Maguiña es autoridad edil elegida en elecciones democráticas en la provincia de Recuay (Ancash).

Sus aspiraciones siempre han sido de servicio a la comunidad. Al ver que la población más pobre viene siendo afectada por el cambio climático, tiene la intención de desarrollar propuestas integrales

(Debajo)

Regidoras Lidia Meza Martínez de Carlos Fermín Fitzcarrald y Ena Ramírez Ayala de Yauya exponen su

Eugenia Edith Maguiña Soto es profesional en enfermería, esposa, madre de tres hijos y egidora en la provincia de Recuay, en Ancash, Perú.

Eugenia lidera la Red de Regidoras de Ancash, grupo que nace con la intención de desarrollar las capacidades de las mujeres regidoras. Su preocupación es la de muchas regidoras mujeres que son tomadas solo para completar listas en las elecciones, pero ven limitadas sus oportundiades de ejercerse plenamente sus deberes y derechos por sesgos de género.

“Yo lo he vivido como autoridad, con tres hijos y un trabajo, como que… el esposo nos ponía límites, pero solo fue al inicio, me gané poco a poco su confianza, de él, de mis hijos, de la misma población, de mi alcalde y las autoridades (…) No ha sido fácil. E incluso ahora para las reuniones que tenemos con el proyecto y las convocatorias las regidoras vienen con sus hijos, es decir la labor es recargada, pero no imposible.”

La alianza de la Red de Regidoras de Ancash y el proyecto colaborativo de USAID y TMI “Asegurando el Agua y los MEWdios de Vida en la Montaña, han iniciado un ciclo de capacitaciones intensivas a 12 regidoras mujeres y 30 lídersas locales de tres mancomunidades municipales. Este equipo se esta entrenando en cómo realizar diagnósticos de género y reconocimiento de los impactos del cambio climático. Las regidoras Lidia Meza Martínez de Carlos Fermín Fitzcarrald y Ena Ramírez Ayala de Yauya en la mancomunidad municipal de Río Yanamayo nos explican que se reunieron con 153 personas, la mayoría mujeres, para analizar su problemática de cambio climático. Aplicando el aprendizaje recibdo del proyecto, organizaron grupos de trabajo para obtener información de los intereses y necesidades de mujeres y hombres para enfrentar los riesgos del cambio climático y discutieron acerca de posibles alternativas de solución.

Eugenia Maguiña señala que la capacitación es importante:

“Nuestra intención no es superar a los regidores varones, sino tener las mismas oportunidades, ya que estamos demostrando que podemos desarrollar igual y mejor la labor, somos honestas y ese es nuestro valor agregado”

11. TABLE OF ANNEXES

The following project documents have been completed and are currently undergoing final editorial review for public use. Documents will be available at www.mountain.pe/gestion

- Anais Zimmer 2015. Diagnóstico comunidades en la mancomunidad municipal Tres Cuencas. TMI-AAMVM. Documento de Trabajo Nro. 1
- Anais Zimmer 2015. Diagnóstico comunidades en mancomunidad municipal de Waraq. TMI-AAMVM. Documento de Trabajo Nro. 2
- Anais Zimmer 2015. Diagnóstico comunidades mancomunidad municipal de Río Yanamayo. TMI-AAMVM. Documento de Trabajo Nro. 3
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The following file (attached) “List of Products and Means of Verification_TMI Securing Mountain Water.xlsx” includes a comprehensive list of means of verification